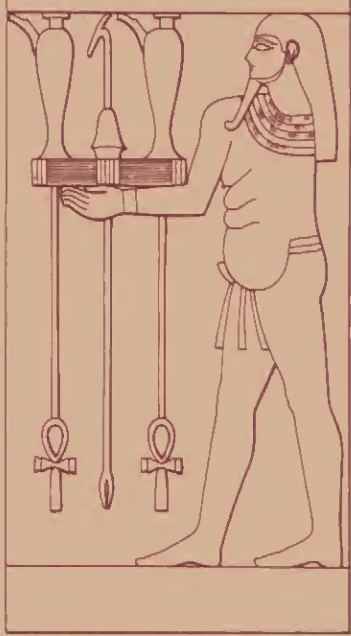
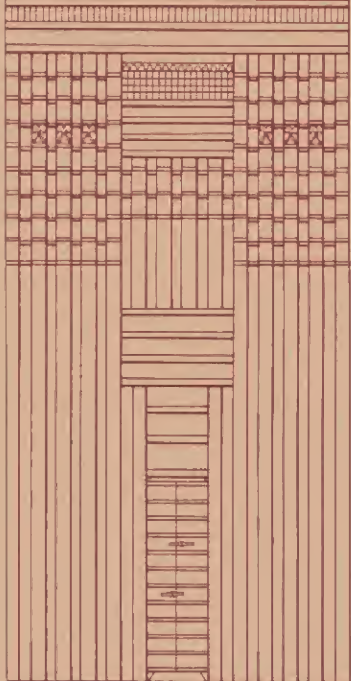


THE SOUTH CEMETERIES OF LISHT  
VOLUME I



# The Pyramid of Senwosret I

BY

DIETER ARNOLD

THE METROPOLITAN MUSEUM OF ART  
EGYPTIAN EXPEDITION

PUBLICATIONS OF  
THE METROPOLITAN MUSEUM OF ART  
EGYPTIAN EXPEDITION  
VOLUME XXII





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EGYPTIAN EXPEDITION

THE SOUTH CEMETERIES OF LISHT  
VOLUME I

# The Pyramid of Senwosret I

BY

DIETER ARNOLD

With contributions by DOROTHEA ARNOLD  
and an appendix by Peter F. Dorman

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## PREFACE

Nine years have passed since the appearance of the most recent Egyptian Expedition Publication, Dieter Arnold's *Temple of Mentuhotep at Deir el-Bahari* from the notes of Herbert Winlock. During that time the Metropolitan Museum of Art completed the reinstallation of its Egyptian collection, the full attention of the Department of Egyptian Art was turned to the publication of its Expedition records, and Dieter and Dorothea Arnold joined the staff in order to lead this effort.

Compared to the great collections of Egyptian art in Europe, that of the Metropolitan Museum is young. But the relatively late date at which the collection was started was also a major asset: the greater part of the Egyptian collection came from controlled excavations which the Museum undertook between 1906 and 1936 at Thebes, Lisht, the Wadi Natrun, the Kharga Oasis, and Hierakonpolis. Thus the collection is rich not only in art objects representative of ancient Egyptian culture, but in pieces which are part of a scientific context. They form groups in which each individual piece contributes to the understanding of the others, for the drawings, notes, plans and photographs in the excavation records provide a wealth of information that places the objects in a specific locality, architectural setting, and chronological horizon.

The Department feels an obligation to make these records available to scholars of the ancient world and to the interested public, following the precedent set by early members of this Department who began the work under the guidance of Curator Albert M. Lythgoe. Excavation then as now meant not only the retrieval of objects and associated information, but the analysis and dissemination of knowledge through publication. Only when the task of publishing all important archaeological information gained during an excavation is accomplished can we feel that the project is completed.

Many problems arise in attempting to publish archival records in the absence of guidance from the original excavators. The reader who is not familiar with excavation records may think that it is a simple task to check the records for a particular piece in order to obtain the information necessary to evaluate its date and meaning. In point of fact, only in very few instances can one obtain information about an object without thoroughly working through all available records of the site from which it came. Usually one note or plan cannot be understood without another; that one leads to another, and in the end one is forced to evaluate a whole site. There is no short cut to understanding context; everything is connected.

Another aspect of reworking old excavations is the need to return to the field areas of a site. In many cases it is preferable to re-excavate, at least in part. The most obvious reason is to permit the author of the final publication to become thoroughly familiar with local conditions at the site. But another reason is even more important. The methods of excavation in the first third of this century have been surpassed by the methods of today, and present-day archaeology not only produces new types of records but also asks new questions.

In 1984 these two considerations induced the Department of Egyptian Art to reopen its work at the site which it had chosen

as its first focus, the ancient site of Lisht near modern-day Cairo. The Egyptian Antiquities Organization kindly granted permission to do this, and three seasons have now taken place with a small staff. Although the study work has taken longer than originally planned, the Department intends to return until the publication work for this site is finished. The aim is not to find new objects or monuments, but to clarify questions left open by the previous team, and to answer questions that have arisen through the current approach to a site. The present volume therefore contains not only old plans, drawings, and photographs, but also new plans and new photographs. Stratigraphic sections and drawings of architectural details have been added. This book, in short, presents the information gained by the original Expedition, seen through the eyes of present-day archaeologists and Egyptologists.

The excavation and the analysis and publication of its field documents, are both time-consuming and costly. The original work at the pyramid of Senwosret I was begun in 1908, and was supported by the Rogers Fund, with contributions by Edward S. Harkness, until excavation ceased in 1936. To those early staff members, museum directors and Egyptian Antiquities Organization personnel who collected the information, supervised the excavations, we owe a great debt. In more recent years our friend Lila Acheson Wallace enabled us to organize and rehouse our archives as a first step in the resumption of the Expedition Publications Program; Charles K. Wilkinson—a member of the Graphic Section of the original Expedition—gave us encouragement. Our Director and Deputy Director—Philippe de Montebello and James Pilgrim—have wholeheartedly supported our renewed efforts, and have worked with us. Our Visiting Committee, chaired first by Daniel P. Davison and now Louise Grunwald and Malcolm Wiener, has raised substantial funds for the Program; the primary donors, including friends, are listed on the back of the title page. We have also received contributions from Visiting Committee members Daniel P. Davison, Pauline Ames Plimpton, and Nina Walker Wainwright; and friends Beatrice and Alfred Appel, William C. Bartholomay, Anne H. Bass, Sid R. Bass, Robert Glenn Bernbaum, Carter Burden, The Discount Corporation of New York, Diana and Frederick Elghanayan, Jack and Elizabeth Josephson, Helen Marx, Frederick A. Melhado, Emma Swan Hall, Mr. and Mrs. Alan B. May, Nanette B. Rodney, and William and Bernice Rose.

The names of the archaeologists, Egyptologists, and other staff members—both past and present—who took part in the work are listed on page 151. The Egyptian Antiquities Organization, under its chairman Ahmed Kadry with the help of many Egyptian colleagues, has made our work possible in Egypt. A. A. Donahue edited the manuscript; Marsha Hill supported the work with her knowledge of the Expedition archives; Walter J. F. Yee and Bill Barrette took photographs of objects in the Museum.

The Metropolitan Museum of Art  
November, 1987

CHRISTINE LILYQUIST  
Curator of Egyptian Art





LIST OF ABBREVIATIONS

GENERAL ABBREVIATIONS

AM	Archival material of the Egyptian Department of the Metropolitan Museum of Art, consisting of catalogued plans and drawings from the Egyptian Expedition of 1906–1934, numbered in 1980.
bl.	blue
c.	cubit(s), ancient Egyptian measurement equalling 52.5 cm.
ca.	circa
Cairo	Egyptian Museum, Cairo. Numbers which follow this abbreviation refer to the Journal d’Entrée.
CG	Catalogue général des antiquités égyptiennes du Musée du Caire
cm.	centimeter(s)
D.	depth
Diam.	diameter
f.	finger(s), ancient Egyptian measurement equalling 1.875 cm.
gr.	green
H.	height
Jd’E	Journal d’Entrée of the Egyptian Museum, Cairo
km.	kilometer(s)
L.	length
m.	meter(s)
mm.	millimeter(s)
MMA	Metropolitan Museum of Art, New York. Numbers which follow this abbreviation are the accession numbers of objects in the Museum. All objects from the Lisht excavation have the credit line “Rogers Fund,” those of the campaigns of 1920–1922 and 1923–1924 also the credit line “Edward S. Harkness Gift.” Bracketed numbers refer to de-accessioned objects no longer in the collections.
NN	Assumed datum level in center of granite threshold between Pr-wrw and court of the mortuary temple (0.00 m.). No government level available.
Neg.no.	Negative number. Numbers which follow this abbreviation refer to the series of negatives by the Photograph Studio of the Metropolitan Museum of Art.
p.	palm(s), ancient Egyptian measurement equalling 7.5 cm.
r.	red
SAE	Service des antiquités de l’Égypte
Th.	thickness

W.	width
y.	yellow

ARABIC TERMS

dabsh	undressed, rough field stones of smaller size
gebel	bedrock
khôr	valley, ravine
moona	Nile alluvium
radim	debris
tafl	laminated shale
zir	water jar

KEY TO INITIALS

D.A.	Dieter Arnold
Do.A.	Dorothea Arnold
F.A.	Felix Arnold
J.E.-C.	Josiane d’Este-Curry
C.H.	Christian Hölzl
P.J.	Peter Janosi
A.S.	Angela Schwab
W.S.	William P. Schenck

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| 6e) L 8–9, 346              | 21c) L 87, 171               |
| 7a) Neg. no. 240 481        | 21d) L 13–14, 1221           |
| 7b) Neg. no. 240 482        | 22a) L 13–14, 1222           |
| 7c) L 8–9, 345              | 22b) L 84, 85                |
| 7d) L 8–9, 347              | 22c) L 8–9, 301              |
| 8a) L 13–14, 1209           | 23a) L 8–9, 275              |
| 8b) L 13–14, 1186           | 23b) L 87, 116               |
| 9a) L 13–14, 1011           | 23c) L 8–9, 282              |
| 9b) L 13–14, 1020           | 23d) L 8–9, 280              |
| 9c) L 84, 224               | 24a) L 8–9, 277              |
| 9d) L 84, 308               | 24b) L 84, 351               |
| 10a) L 13–14, 1022          | 24c) L 84, 47                |
| 10b) L 13–14, 1019          | 24d) L 84, 393               |
| 10c) L 84, 298              | 25a) L 12–13, 188            |
| 10d) L 84, 207              | 25b) L 12–13, 1227           |
| 11a) L 8–9, 360             | 25c) L 8–9, 307              |
| 11b) L 13–14, 1012          | 25d) L 84, 379               |
| 11c) L 13–14, 1013          | 25e) L 12–13, 404            |
| 11d) L 13–14, 1010          | 26a) L 84, 155               |
| 12a) Slide                  | 26b) L 84, 157               |
| 12b) L 84, 277              | 26c) L 84, 24                |
| 12c) Slide                  | 26d) L 84, 25                |
| 12d) L 86, 691              | 26e) L 84, 113               |
| 12e) L 84, 269              | 27a) L 31–32, 168            |
| 12f) L 86, 716              | 27b) L 33–34, 587            |
| 13a) L 8–9, 362             | 28a) 18 L 20 (year 1918)     |
| 13b) L 8–9, 363             | 28b) L 7–8, 534              |
| 13c) Neg. no. 241 303       | 28c) L 33–34, 204            |
| 13d) Neg. no. 241 302       | 28d) L 31–32, 56             |
| 13e) Neg. no. 241 304       | 29a) L 31–32, 66             |
| 14a) Neg. no. 33 164        | 29b) L 31–32, 59             |
| 14b) L 13–14, 1288          | 29c) L 84, 232               |
| 15a) L 13–14, 1284          | 29d) L 84, 233               |
| 15b) L 13–14, 1286          | 29e) L 84, 236               |
| 15c) L 13–14, 1287          | 30a) L 32–33, 161            |
| 15d) Neg. no. 201 279       | 30b) L 84, 346               |
| 15e) Neg. no. 201 276       | 30c) L 7–8, 537              |
| 15f) Neg. no. 201 278       | 30d) L 84, 316               |
| 16a) L 8–9, 250             | 31a) L 31–32, 248            |
| 16b) L 8–9, 265             | 31b) 6 LN 145 (year 1923–24) |
| 17a) L 13–14, 1199          | 31c) L 31–32, 256            |

- 31d) L 84, 343  
31e) L 7-8, 535  
32a) Photo file XII-P, frame no. 22  
32b) L 31-32, 274  
32c) L 7-8, 536  
33a) L 31-32, 251  
33b) L 31-32, 258  
33c) L 8-9, 43  
33d) L 8-9, 37  
33e) L 31-32, 279  
34a) L 31-32, 257  
34b) L 31-32, 270  
34c) L 31-32, 261  
34d) L 8-9, 45  
34e) L 31-32, 255  
34f) L 31-32, 260  
35a) 6 LN 144 (year 1923-24)  
35b) L 12-13, 207  
35c) L 12-13, 207  
35d) H. Burton Photo  
35e) L 84, 67  
35f) L 84, 69  
36a) Neg. no. 230655  
36b) Neg. no. 230654  
36c) Neg. no. 230656  
36d) Neg. no. 130657  
37a) L 32-33, 341  
37b) L 33-34, 260  
38a) L 33-34, 592  
38b) Slide  
38c) L 86, 511  
38d) L 86, 513  
39a) L 31-32, 107  
39b) L 31-32, 64  
39c) L 84, 9  
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40a) L 31-32, 247  
40b) L 86, 637  
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41a) L 84, 240, 241  
41b) L 86, 635  
41c) L 86, 644  
41d) L 84, 168  
42a) L 87, 38  
42b) L 87, 39  
42c) L 32-33, 115  
42d) L 32-33, 116  
43a) L 32-33, 233  
43b) L 32-33, 117  
43c) L 87, 26  
43d) L 87, 29  
44a) L 33-34, 591  
44b) L 33-34, 590  
44c) Photo John Rutherford  
44d) Photo John Rutherford  
45a) Photo C.H.  
45b) Photo C.H.  
45c) L 84, 248  
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46a) L 84, 5  
46b) L 84, 263  
46c) L 84, 188  
46d) L 84, 267  
47a) L 84, 406  
47b) L 84, 396  
47c) L 84, 398  
47d) L 84, 399  
48a) 16 L 82 (year 1916)  
48b) 16 L 83 (year 1916)  
48c) L 87, 250  
48d) L 87, 135  
49) L 33-34, 406, 408, 409, 417, 423; 84, 213  
50) L 33-34, 403, 405, 410-413, 417-419, 423  
51) L 33-34, 353, 404, 418, 419, 423, 435, 517  
52a) L 32-33, 87  
52b) L 32-33, 340  
52c) L 86, 716  
52d) L 33-34, 176  
53) Drawing J.E.-C., based on AM 2647-2658  
54) Drawing J.E.-C., based on AM 2647-2658  
55) Drawing J.E.-C., based on AM 2647-2658  
56) Drawing J.E.-C., based on AM 2647-2658  
57a) L 32-33, 333  
57b) L 32-33, 331  
57c) L 32-33, 332  
57d) L 32-33, 344  
57e) L 32-33, 338  
58a) L 33-34, 395  
58b) L 87, 3  
58c) L 33-34, 225  
58d) 6 LN 19  
59a) L 33-34, 433  
59b) L 33-34, 434  
59c) L 33-34, 400  
59d) L 33-34, 561  
59e) L 33-34, 562  
60a) L 31-32, 180  
60b) L 31-32, 181  
60c) L 31-32, 229  
60d) L 31-32, 233  
61a) L 31-32, 94  
61b) L 31-32, 95  
61c) L 31-32, 158  
61d) L 31-32, 157  
62a) L 31-32, 57  
62b) L 31-32, 58  
62c) L 31-32, 62  
62d) L 31-32, 182  
63a) L 31-32, 162  
63b) L 31-32, 160  
63c) 6 LN 48 (year 1923-24)  
63d) L 31-32, 192  
64a) L 31-32, 92  
64b) L 84, 173  
64c) L 33-34, 199  
64d) L 32-33, 52  
65a) L 32-33, 234  
65b) L 32-33, 235  
65c) L 32-33, 236  
65d) L 32-33, 336  
66a) L 31-32, 17  
66b) L 31-32, 18  
66c) L 33-34, 171  
66d) L 31-32, 21  
67a) L 84, 200  
67b) L 84, 199  
67c) L 84, 203  
67d) Neg. no. 12 608  
67e) L 84, 202  
67f) L 13-14, 1283  
68a) L 33-34, 436  
68b) L 33-34, 439  
68c) L 33-34, 444  
69a) Neg. no. 167 308  
69b) L 12-13, 251  
69c) L 33-34, 442  
70a) L 33-34, 186  
70b) L 33-34, 188  
70c) L 33-34, 449  
71a) L 33-34, 447  
71b) L 33-34, 448  
72a) Neg. no. 98 164  
72b) Neg. no. 98 166  
72c) Neg. no. 98 170  
72d) Neg. no. 98 171  
72e) Neg. no. 98 172  
72f) Neg. no. 98 278  
72g) Neg. no. 98 299  
73) Original drawing by L.F. Hall, surveyed by W. Hauser, AM 2597 (1:5000) with a few corrections. Inked by W.S.  
74) D.A. from survey by Do.A.  
75) D.A. on basis of AM 2608A and 2610 (1/500)  
76) D.A.  
77) D.A. from survey by C.H.  
78a-78b) W.S. from drawing of Do.A.  
79a-79c) W.S. from drawing of Do.A.  
80) D.A. from AM 2662 (1:200) with numerous additions suggested by Do.A.  
81) D.A.  
82) D.A. from survey by A.S. Statues added from *Licht* fig. 23.  
83) D.A.  
84) D.A.  
85) D.A. from survey by P.J.  
86) D.A.  
87) D.A.  
88) D.A. from survey by P.J.  
89) D.A. Pl. 89 E from AM 3217-3222 and Wilbour's description (*Travels in Egypt*, 250).  
90) D.A.  
91) D.A. from survey by D.A. and P.J.  
92a) D.A. from drawing AM 2634, 2635  
92b) W.S. from survey D.A.  
93a) D.A. from drawing with F.A.  
93b) D.A. from drawing by F.A.  
94) D.A.  
95a) D.A. from survey by P.J.  
95b) D.A. from survey by P.J. and drawing AM 2630  
96) Lisa Majerus, F. and D.A.  
97) J.E.C. from survey by C.H. and D.A.  
98a) D.A.  
98b) D.A.  
99) D.A. based on drawings AM 2637-2646  
100) D.A.  
101) D.A. based on drawings AM 2647 (1/20)  
102) D.A.  
103) A.S. from drawing AM 2724 (1/100)  
104) D.A. from survey by A.S.  
105) D.A.

## SOURCES OF FOLDOUTS

- I) D.A. from plans AM 2617-2623 (1:200) with additions from recent survey  
II) D.A. from plan AM 2665. Reconstructions based on recent survey and observations  
IIIa) D.A.  
IIIb) D.A. from drawing by A.S.  
IIIc) D.A. from drawing by A.S.  
IV) D.A. from survey by C.H.  
V) D.A. from survey with C.H. and drawing AM 2628

## INTRODUCTION

The pyramid field of Lisht (correctly El-Lisht) is located 65 km. south of Cairo, about 3 km. from the railway station of El-Matania (pl. 73).<sup>1</sup> It is an area about 3.5 km. long and 600 m. wide which lies at the edge of the desert just west of the villages of Bamha, Lisht, and Saudiya (formerly El-Maharraqa). The field is under the authority of the governorate of Giza; its antiquities are administered by the Inspectorate of Saqqara of the Egyptian Antiquities Organization.

The cemeteries are dominated by two pyramids, that of Amenemhat I to the north, and of his son Senwosret I to the south. In the reign of Amenemhat I, the royal residence was transferred from Thebes in Upper Egypt to its traditional location in the area of Memphis. It is known that a new city was founded under the name of *It-t3wy*,<sup>2</sup> but its location is not attested and has therefore been the subject of debate. While it is natural to assume that the city would lie in the neighborhood of the two pyramids of Lisht, other suggestions have been advanced.<sup>3</sup> The archaeological evidence, however, strongly favors Lisht. In the first place, the great number of tombs surrounding the two pyramids—tombs which date from the late Old Kingdom into Roman times—can only be explained by the proximity of a large town. The remains of a town can in fact be seen along the banks of the Mahât canal to the northeast of Lisht. For a length of several hundred meters to the north of the site, the soil excavated from this canal is mixed with fragments of limestone (including some column bases) and of pottery, most of which suggest an origin in the late Middle Kingdom. In 1976, a stretch of the same canal just opposite the pyramids of Amenemhat I yielded a granite altar dedicated by Senwosret I to Amen-Ra and Montu:<sup>4</sup> a few years later, a second altar was discovered in the same place.<sup>5</sup> Furthermore, as John S. Perring, the first modern visitor to the site, remarked,<sup>6</sup> Bamha stands on ancient remains, and the outskirts of the ancient town are still visible northeast of the pyramid of Amenemhat I in places where the lower edge of the desert, covered with debris from cultivation, has not been reached by agriculture. In contrast, no such traces of ancient occupation have been found south of the village of Lisht. The ancient town may thus have covered the area between the Bahr el-Libeini and the Muhât canal, beginning slightly north of Bamha and extending slightly south to Lisht—an area approximately 1 by 2.5 km.

The geology of the desert plateau on which the cemeteries of Lisht are located has not yet been fully studied.<sup>7</sup> The plateau rises slightly from north to south. The slope begins north of the pyramid of Amenemhat I at approximately the level of the cultivated fields, and reaches its highest point—about 18–20 m. above the Nile valley—at the pyramid of Senwosret I. Not far to the east and south of this pyramid the desert plateau breaks off, and the cultivated area curves sharply westward, extending, like a bay, into the desert.

A wide, deep wadi separates the two pyramids. At the point where its mouth opens on the east, a stretch of exposed bedrock on the north bank is pierced by tombs of the late Old Kingdom.<sup>8</sup> In front of these tombs, two hills rise in the mouth of the wadi: one is an ancient industrial site; the other, a late burial ground.

The geological stratification can be observed at the edge of the desert plateau and in the shafts of the tombs. The sequence

appears to consist of desert sand on the surface, followed by pebble conglomerate, thick layers of laminated shales, and soft limestone. The limestone formation is found at depths ranging from 10 to 18 m.; it appears at deeper levels in the north, and at shallower ones in the south. This limestone was sought by the tomb-builders because it is sufficiently solid for use in underground constructions, yet is easy to cut. In places where the limestone formation occurs at depths of 20 m. or more, the tomb chambers had to be cut hazardously close to the water table. The level of ground water has risen about 4 m. in the past 4000 years (see page 71); consequently, many burials have been submerged and could only be excavated with the aid of pumps.

The limestone formations were also exploited by the ancient builders as a source for core material of the various superstructures. Limestone of better quality was brought from other places on the east bank of the Nile for wall casings, pavements, and sculpture. Nonetheless there is evidence for considerable quarrying activity at Lisht, and the ancient quarries are numerous. The material for the core of the south pyramid seems to have been cut from the edges of the plateau southeast, south, and southwest of the pyramid of Senwosret I and north of the pyramid of Amenemhat I; transportation ramps have been noted which led from the quarries up to the construction site on the plateau. J. E. Gautier<sup>9</sup> observed one such ramp which ascended the wadi between the causeway of Senwosret I and the “Windmill Hill” southeast of the pyramid. (This hill is also cut by rock-tombs, probably of the later Twelfth Dynasty.) A second ramp, excavated in 1918 by the Metropolitan Museum Expedition in the so-called south *khôr*, served quarries along the southern slope of the pyramid plateau.

The largest quarry, which lies southwest of the southern pyramid, has been completely destroyed by the removal of stone in ancient and modern times. Although a large, gently sloping wadi running between this area and the pyramid has yielded no traces of a transportation ramp, such indications are found close to the southwest corner of the pyramid. There may

Maps available to us were the following sheets of the Survey of Egypt:  
1:50,000 (1912) Sheet II-I Dahshur

Sheet II-II 'Ayat

Sheet III-I Reqqa

1:10,000 (1905) Sheet S.E. 11-5, 11-6, 12-5, 12-6

1:4,000 (1914) Sheet 498 North of El-Lisht

(1914) Sheet 499 El-Lisht Village

(1914) Sheet 509 North of Maharraqa

(1914) Sheet 511 Maharraqa Village

(1922) Sheet without number: West of Maharraqa Village

and the Expedition map of the north and south cemetery surveyed by Walter Hauser drawn by Lindsley F. Hall 1:5,000, probably using aerial photographs; here pl. 73.

<sup>2</sup> W. K. Simpson, *JARCE* 2 (1963) 53–59; “Lisht” in: *LÄ* III, 1057–1061; W. Helck, “*Itj-tawi*” in *LÄ* III, 211.

<sup>3</sup> J. v. Beckerath, *Untersuchungen zur politischen Geschichte der Zweiten Zwischenzeit in Ägypten* (*ÄgFo* 23 [1964]) 78–81. He suggests the area of Dahshur.

<sup>4</sup> Aly El-Khouly, *JEA* 64 (1978) 44.

<sup>5</sup> Unpublished. Standing in the courtyard of the Inspectorate of Antiquities at Saqqara.

<sup>6</sup> Vyse, *Pyramids* III, 77.

<sup>7</sup> *Licht* 2, fig. 1 gives a general idea.

<sup>8</sup> *BMMA* 28, April 1933, II, 22, fig. 20.

<sup>9</sup> *Licht* 80; plan, pl. 3.

be further evidence of ancient activities in the large wadi that separates the two pyramids and in its numerous tributaries north of Senwosret's pyramid: while surface potsherds could indicate burials, workmen's settlements or transportation work are also possibilities.

The main cemetery areas around the pyramid of Senwosret I are located on the plateau and the slopes south of the structure, and to the east, on the north side of the causeway. Some isolated tombs were built to the north (the "*mastaba du nord*") and the northeast (the tomb of Senwosret-anekh and its neighbors). Some of these structures certainly belong to the period of Senwosret I, while others were built during the course of the Twelfth Dynasty and even later.

The nature of the pre-existing settlement at the site where the founders of *It-t3wy* decided to build the new city is not known, but to judge from the few, rather small rock-cut tombs of the late Old Kingdom or First Intermediate Period, it cannot have been an important place. Nor is it clear why Amenemhat I chose this area as the site for the new foundation. It lies far from the Old Kingdom residences which probably still stood at Dahshur, 25 km. to the north, and at Meidum, 21 km. to the south. Furthermore, the Fayum is distant and not easily accessible from Lisht, for the nearest desert road to the area leaves the Nile valley at El-Gerzeh, 13 km. south of the site, and is 10 km. long. If Amenemhat I planned any activities in the Fayum, a location like Illahun would have been more practical.

The occurrence of limestone suitable at least for use in the cores of the pyramids may have influenced the selection of Lisht as the site for the royal residence. Against this assumption, however, may be the fact that a great quantity of blocks for the core of the pyramid of Amenemhat I were transported from ruined older buildings at Saqqara and perhaps even Giza.<sup>10</sup>

The close connection between the pyramid of Amenemhat I and *It-t3wy* might indicate that *It-t3wy* was considered to be the pyramid-city of that structure.<sup>11</sup> The pyramid of Senwosret I, in contrast, occupies a more prominent hill, but lies far beyond the outskirts of the town; it might have had a pyramid-city of its own with the name *H'j-Snwsrt* (see page 17.)

The residence city of *It-t3wy* probably lost its importance when the administration was moved to Dahshur, Illahun, and then Hawara in the Twelfth Dynasty, and to Memphis in the Thirteenth. After the funerary cult—and consequently the security of the pyramid cemeteries—declined, the two pyramids at Lisht were broken into. That of Amenemhat I became the target of stone-robbers in the Second Intermediate Period, and by the beginning of the New Kingdom a settlement had already spread over its demolished mound. Because it was farther from the city and more difficult to approach, the pyramid of Senwosret I may have escaped dismantling until later, perhaps during the Eighteenth Dynasty. In Roman times, the devastated cemeteries of Lisht were again used for burials.

After centuries of destruction and abandonment, the first European scholars to visit and report on the pyramids of Lisht were the members of the Napoleonic Expedition, who thought that the southern pyramid was "bent."<sup>12</sup> The next scholarly visitor was John S. Perring, in October 1839, who recorded some notes on the two structures.<sup>13</sup> In the following year, the expedition of Karl Richard Lepsius produced a long and more detailed description of the site.<sup>14</sup> The first work of excavation was carried out in 1883 by Gaston Maspero, whose workmen tried unsuccessfully to open the entrance corridors of the two pyramids.<sup>15</sup> Charles Edwin Wilbour visited the excavation and

wrote a lively account of this adventurous undertaking.<sup>16</sup> In 1886, Wilbour returned to the site with the Minister of Public Works, Sir Colin Campbell Scott-Moncrieff (1836–1916), in order to mount a proper exploration, this time making use of pumps; the results of that project were not reported.<sup>17</sup> On behalf of the French Institute of Oriental Archaeology at Cairo, Joseph-Étienne Gautier and Gustave Jéquier came to Lisht in 1894–1895 to carry out a more scientific exploration of the cemeteries.<sup>18</sup> The published reports of these excavations reflect the deplorable level of early archaeology, but attest to the serious intentions of these scholars. Favored by the luck of early archaeologists, they came upon such famous monuments as the cachettes of the Osiride statues and of the seated limestone figures of Senwosret I, the hawk panels of the enclosure wall of his pyramid, the granite altar of the pyramid court, the life-size figure of Nakht, and several of the re-used blocks in the mortuary temple of Amenemhat I.

When the Metropolitan Museum of Art in New York was founded in 1880, and its main, east wing was inaugurated in 1902, the natural way to acquire a significant collection of Egyptian antiquities was by archaeological fieldwork in Egypt which resulted in a partition of finds. Attracted by the important discoveries made by the expedition of the French Institute of Oriental Archaeology at Lisht, a site far from being exhausted, the Museum sent its first Egyptian Expedition, under Albert M. Lythgoe, to Lisht in the winter of 1906/1907. This expedition worked there for fourteen seasons (1906/1907, 1907/1908, 1908/1909, 1912/1913, 1913/1914, 1916/1917, 1917/1918, 1920/1921, 1921/1922, 1923/1924, 1924/1925, 1931/1932, 1932/1933, 1933/1934) under the direction and/or with the participation of Lythgoe, and later under Ambrose Lansing and Arthur C. Mace. It was the first site dug by the Expedition, and although field techniques improved as time went on, and the recording of Winlock and Hayes reached a reliable level, the Lisht work took second place to that at Thebes, and often suffered from the lack of sufficient support people.

The results of the Lisht excavations were published in a sequence of reports in the *Bulletin of the Metropolitan Museum* from 1906 to 1934; in only 233 pages, these gave an excellent overview of the work.<sup>19</sup> Some outstanding discoveries, such as the burial of the lady Senebtisi and the pyramid texts of the burial chamber of Senwosret-anekh were published in monographs.<sup>20</sup> It is difficult to say what additional publications were planned.

<sup>10</sup> Goedicke, *Re-used Blocks* 6–7. One might suspect, however, that these blocks were not extracted from their original context by the builders of the pyramid of Amenemhat I. They could have found the blocks around unfinished buildings (pyramids?) of the Herakleopolitan kings of the First Intermediate Period, who are more likely to have demolished older monuments for their purposes. These buildings might have been much closer to Lisht, perhaps at Saqqara.

<sup>11</sup> For pyramid cities in general, see R. Stadelmann, *RdE* 33 (1981) 67–77. No name for a separate pyramid city of Amenemhat I seems to exist, unless *3h-st-jb* refers to a separate city.

<sup>12</sup> *Description de l'Égypte* IV, 429, pl. 72, fig. 4.

<sup>13</sup> Vyse, *Pyramids* III, 77–78.

<sup>14</sup> LD Text I, 212–216; plan: pl. I, 43.

<sup>15</sup> G. Maspero, *Études de mythologie et d'archéologie égyptienne* I (Paris, 1893) 148; G. Maspero, *BIE* 6 (1885) 245.

<sup>16</sup> Wilbour, *Travels in Egypt* 249–251.

<sup>17</sup> Wilbour, *Travels in Egypt* 344.

<sup>18</sup> See *Lisht*.

<sup>19</sup> See list pp. 150.

<sup>20</sup> Arthur C. Mace and Herbert E. Winlock, *The Tomb of Senebtisi at Lisht*. Publications of the Metropolitan Museum of Art, Egyptian Expedition I



The material for as many as nine volumes remained, but no publications appeared after 1934 until Christine Lilyquist, curator of the Department of Egyptian Art, renewed the program of publication for the Expedition records housed in the Metropolitan Museum of Art.

The first step in this project was the organization of the many photographs, drawings, and field notes, which had become disorganized over the years. This difficult work was carried out by Janine Bourriau for the cemeteries of the northern pyramid and by Ray A. Slater for the southern pyramid. Louis Kunsch and Andrew Clark mounted and organized the hundreds of drawings. When the author and Dorothea Arnold joined the Department of Egyptian Art in 1984, the material was well prepared for study of the southern pyramid and consisted of the following items:

Handwritten or typed field notes, subsequently numbered and designated "Lisht Journal." These notes were unsystematic and sketchy, and only in a few cases were extensive or exhaustive.<sup>21</sup> It is certain that not all the original notes were preserved.

"Tomb cards," numbered in 1980. These, prepared by Hayes, were sometimes carefully done, with clean drawings drawn to scale. They record objects as well as observations. Unfortunately, the earlier seasons are not well represented; very often even Hayes could no longer reconstruct the provenance of objects he registered in the storerooms of the expedition house.<sup>22</sup>

A great number of plans were drawn in the field. A few of these were inked for publication in the preliminary reports, but most of the plans were unfinished and not prepared for publication. These lack common surveying points, levels, and a numbering system for tomb shafts, and their uneven quality and imprecision reflect the situation of an excavation operating with hundreds of workmen and only one architect. Except for sections of the more important tomb shafts, no profiles were drawn or observations on stratification recorded.

An extensive collection of large-size, high-quality photographs. These document the objects found and some of the work in progress. Not enough close-range photographs were taken, however, since the photographs usually being taken from the pyramid or from the higher mounds of debris.

As important as this material is, it does not offer a basis for an archaeological study of the cemeteries of Lisht commensurate with the standards of modern archaeology. Even in the rare cases when questions were asked by the excavators, the conclusions they drew from their observations and published in their reports were often wrong or misleading. It was therefore clear from the beginning of the new publication project that an uncritical edition of existing records would be not only insufficient but also irresponsible. More fieldwork had to be undertaken, on the one hand to check and redraw excavated areas, and on the other, to find untouched areas where the answers to the numerous questions raised could be expected to lie. This work has begun with three campaigns, the first from October 1984 to February 1985, the second from March to May 1986 and the third from May to July 1987. During these few months at Lisht it was impossible to re-excavate and document everything that had been discovered in many campaigns from 1906 to 1934 with huge crowds of workmen. Instead, we had to choose carefully the areas to be studied. The criteria for selection were, of course, the importance of the monument and the quality of the existing documentation and the possibilities for studying problems which had never occurred to the older archaeologists: for instance, studies of pottery, or the history of construction and building technique. The pursuit of such studies carried us away in some cases from the original aim of publishing old

material only; but no archaeological site publication is thinkable which excludes the pottery, and no pyramid temple can be published without considering its building history or technique.

In the present publication, the synthesis of the older records and the results of the recent campaigns concentrate on the major monuments of the royal funerary complex of Senwosret I: the causeway, pyramid temple, inner court, main pyramid, Ka-pyramid and entrance chapel. In a second volume in preparation the monuments of the outer court of the pyramid complex will be published—that is, the queens' pyramids and the tomb shafts of that area. The mortuary temple reliefs and the quarry inscriptions are being collected for future publications. The synthesis between old and new material has not easily been achieved. The old plans proved to be either so inaccurate or so much distorted that it was not possible to match them exactly with the new ones. It was therefore preferable not to combine them but to present them separately. Only on the large-scale maps were the new plans integrated into existing surveys, since a new survey was now out of the question.<sup>23</sup>

Participants in the fieldwork at Lisht 1984–1987 were, in addition to the author, Dorothea Arnold (site supervisor and pottery specialist), Christian Hölzl (site supervisor, architecture), Günther Heindl (site supervisor), Angela Schwab (draftsman), Peter Janosi (draftsman), William P. Schenck (draftsman), Lisa Majerus (draftsman), Ray A. Slater (senior staff member, archives), Sarah Orel (junior staff member), Felix Arnold (junior staff member). We thank the engineers John B. Rutherford and Steven Boyle of Rutherford & Chekene, San Francisco, for their participation and their valuable advice on the work in the pyramid passage. The representative of the Egyptian Antiquities Organization was our longtime friend Inspector Abdelkarim Abu Sharnab. Joseph Dorner of the Austrian Archaeological Institute in Cairo was kind enough to determine astronomical north and the base length of the pyramid of Senwosret I (see p. 64) and to establish some essential measuring points around the pyramid.

I would also like to thank Paul Walker and R. N. Verdery, the directors of the American Research Center in Egypt, for assisting the work of the expeditions from 1984–1987 with the facilities of their institution, Werner Kaiser, director of the German Archaeological Institute, Cairo and Manfred Bietak, director of the Austrian Archaeological Institute, Cairo for their kind permission to use their institutes as a base, and especially Gerhard Haeny, director of the Swiss Archaeological Institute, who supplied us with beds and tents for our first season before our expedition house was built. We considered this equipment a good omen, since it had been first used by Ludwig Borchardt at Abusir, exactly 80 years ago.

The permission to work at Lisht was kindly provided by the Permanent Committee of the Egyptian Antiquities Organization and its president, H. E. Ahmed Kadry. H. E. Mahmud Abderaziq assisted the project with great efficiency.

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(New York, 1916); W. C. Hayes, *The Texts in the Mastaba of Sen-Wosret-ankh at Lisht*. Publications of the Metropolitan Museum of Art, Egyptian Expedition 12. (New York, 1937).

<sup>21</sup> An exception is two folders with field notes on the mastaba of Senwosret-ankh and surrounding tombs.

<sup>22</sup> They were generally registered under the enigmatic provenance of "old material, *radim*" or similar rubrics.

<sup>23</sup> Nearly all features excavated and drawn by the older expeditions are covered by huge mounds of debris and cannot now be surveyed without large-scale excavation.

## CHAPTER I

### The Funerary Complex of Senwosret I

(pls. 1, 75; foldouts I-II)

Pepi II was the last pharaoh of the Old Kingdom to build a pyramid complex in the Memphite tradition. The tombs of his successors in the First Intermediate period are for the most part unknown, but it may be suggested either that they were rather insignificant pyramidal structures,<sup>24</sup> or that they did not follow the Memphite tradition at all, but were instead developed from local traditions of private tomb construction in Upper Egypt.<sup>25</sup>

The first king after that period to construct a monumental funerary complex was Mentuhotep Nebhepetra. His architects created a unique new temple/tomb-complex at Deir el Bahari<sup>26</sup> which reflected local, Upper Egyptian traditions. This complex had its greatest influence on projects of the Eighteenth Dynasty, six hundred years later, for the king's immediate successors were not in a position to continue building on that large a scale.<sup>27</sup> Indeed, it was only Amenemhat I who returned to the Old Kingdom tradition of the pyramid complex, and the structure achieved by his architects seems to have been a rather reduced and simplified version of the complexes of the Old Kingdom.<sup>28</sup> Senwosret I was the first king to recreate such a monument on its full scale and with all its essential parts. His complex, with its causeway, pyramid temple, inner court enclosing the main pyramid, and Ka-pyramid, together with the entrance chapel and the outer court with nine smaller pyramids, clearly follows models of the late Fifth and the Sixth Dynasties.

Thanks to its relatively good preservation and the activities of several generations of archaeologists, the funerary complex of Senwosret I is one of the best examples of a royal funerary complex of the Middle Kingdom. The only major deficiencies in our knowledge—which may be corrected in the future—are the valley temple, which has not yet been excavated, and the funerary apartments of the main pyramid, which have been rendered inaccessible by the high water table.

The name of the pyramid was  $\left(\begin{smallmatrix} \text{pyramid} \\ \text{signs} \end{smallmatrix}\right) \text{ } \text{S} \text{ } \text{w} \text{ } \text{s} \text{ } \text{r} \text{ } \text{t}$ , *Snwsrt ptrj t3wj* ("The pyramid: Senwosret is Viewing the Two Lands"). This name has been transmitted by inscriptions on the plaques of the three known foundation deposits under the corners of the pyramid.<sup>29</sup>

Two other names are connected with the pyramid city, the funerary complex, and the mortuary temple, but their precise assignment is much less secure. The name  $\left(\begin{smallmatrix} \text{fortified city} \\ \text{signs} \end{smallmatrix}\right) \text{ } \text{H} \text{ } \text{w} \text{ } \text{s} \text{ } \text{r} \text{ } \text{t}$  (*Snwsrt* "Senwosret appeared"), might better refer to a fortified city, such as the pyramid city or its precinct, than to a mortuary precinct.<sup>30</sup>

The second name,  $\left(\begin{smallmatrix} \text{pyramid} \\ \text{signs} \end{smallmatrix}\right) \text{ } \text{H} \text{ } \text{n} \text{ } \text{m} \text{ } \text{t} \text{ } \text{s} \text{ } \text{w} \text{ } \text{t} \text{ } \text{H} \text{ } \text{p} \text{ } \text{r} \text{ } \text{k} \text{ } \text{3} \text{ } \text{R}$  (*Hnmt-swt Hpr-k3-R'* "The pyramid [-precinct?]: favored of places of Hpr-k3-R"),<sup>31</sup> could be connected with the pyramid precinct in general. Since

a fairly significant cult of Hathor of *Tp-jhw* (Atfih) must be allocated to the *Hnmt-jswt*,<sup>32</sup> it must be asked whether such a cult could have been accommodated in a mortuary temple, with its fixed scheme of rooms. I would suggest instead that the cult was housed in a sanctuary of its own in front of the Ka-pyramid in the outer court.<sup>33</sup> If this was the case, the *Hnmt-jswt* in which Hathor dwelt was not the mortuary temple, but the funerary precinct as a whole.

According to dated transportation marks on foundation blocks and backing stones, the construction of the causeway, pyramid temple, and main pyramid began before year 10 of Senwosret I and lasted until after year 22—that is to say, the project extended from about his sixth to his twenty-fifth regnal year.<sup>34</sup> There is evidence that the entire funerary complex was completed and used for the burial and the mortuary cult of the king.

<sup>24</sup> For example, the pyramid of king Jb: PM III<sup>2</sup>, 425; Gustave Jéquier, *La pyramide d'Aba* (Cairo, 1935). A pyramid tomb of king Merikara is known from an inscription: James E. Quibell, *Excavations at Saqqara (1905/1906)* (Cairo, 1907) 21–23, pls. 13–15; and (1906–1907) (Cairo, 1908) pl. 6; Cecil M. Firth and Battiscombe Gunn, *Teti Pyramid Cemeteries* (Cairo, 1926) 187–188, pl. 27 B.

<sup>25</sup> For example, the tombs of the Intef-family at El-Tarif: Dieter Arnold, *Die Gräber des Alten und Mittleren Reiches in El-Tarif* (Mainz, 1976) 19, 25, 33; and the tomb of king Khui at Dara: Raymond Weill, *Dara. Campagnes de 1946–1948* (Cairo, 1958).

<sup>26</sup> Arnold, *Mentuhotep*; Arnold and Winlock, *Mentuhotep*.

<sup>27</sup> For example, the unfinished tomb of Seankhkara Mentuhotep: H. E. Winlock, *AJSL* 32 (1915) 29–36; *BMMA* 16, Nov. 1921, II, 29–34.

<sup>28</sup> See the plan published in *BMMA* 17, Dec. 1922, II, 5, fig. 1.

<sup>29</sup> See here p. 90, fig. 37, and *BMMA* 28, April 1933, II, 12, fig. 10.

<sup>30</sup> F. Gomaà, *SAK* 11 (1984) 109.

<sup>31</sup> This name appears quite frequently: see, e.g., Pierre Lacau and Henri Chevrier, *Une chapelle de Sésostri I<sup>er</sup> à Karnak* (Cairo, 1956) 209 [583]; F. Gomaà, *SAK* 11 (1984) 110 n. 18.

<sup>32</sup> F. Gomaà, *SAK* 11 (1984) 109–110. At Lisht see: *Licht* 60, fig. 69.

<sup>33</sup> Extensive limestone subfoundations were found in the outer court east of the Ka-pyramid (see p. 74). This location south of the temple might also be meaningful for a Hathor sanctuary, since the *mrjt*-buildings of the Old Kingdom (Karola Zibelius, *Ägyptische Siedlungen nach Texten des Alten Reiches* [Wiesbaden, 1978] 100–102; W. Barta, *ZÄS* 110 [1983] 98–104) and the Hathor sanctuaries of the royal mortuary temples of the New Kingdom were located there. See also the dedication to Hathor at the southern gate of the valley temple of Chephren: Rainer Stadelmann, *Die Ägyptischen Pyramiden* [Mainz, 1985] 276 n. 406.

<sup>34</sup> The great number of inscriptions collected will be published in a separate volume. For now, see *BMMA* 28, April 1933, II, 4–8; 28 Nov. 1933, II, 6 fig. 4. W. C. Hayes' argument that the date of year 10 on a foundation block of the pyramid entrance (for problems concerning the location of the inscription see n. 226) established the date of the beginning of construction on the pyramid is wrong. The block in question was not the first to be laid, but was the last block of the entrance corridor, the construction of which would already have taken some years. The date of year 22 appears on a foundation block of phase A of the causeway. Since the following phase B of the causeway indicates a still later date, building activities—at least around the pyramid—could well have lasted until the late twenties of the king's reign.

## CHAPTER II

### The Valley Temple

The valley temple of Senwosret I, which certainly existed,<sup>35</sup> may lie deeply buried under the sand dunes north of the Islamic cemetery with its picturesque tombs of local sheikhs. In 1985–1986, during the time this area was being prepared for cultiva-

tion, two test clearings were carried out on a line with the axis of the causeway. The discovery of disturbed burials of the Roman period directly under the surface prevented excavation to deeper levels, where remains of the temple could be expected to lie. The Roman burials seem to be part of a larger cemetery extending south to the Islamic cemetery and north to the end of the hills.

## CHAPTER III

### The Causeway

#### 1. The Architecture

(figs. 1–2; pls. 3–5, 76–77, 105)

Sources: Tomb card 91.

*BMMA* 3, Sept. 1908, 171; 4, July 1909, 119–120.

PHOTOS: L 7–8, 374, 376; L 8–9, 221, 223, 227,

231–236, 241–243, 284–285; L 13–14, 1197, 1209.

PLANS: AM 2622, 2662, and 2663 are rough sketches drawn 1:200.

During the seasons of 1907/1908 and 1908/1909, the Egyptian Expedition unearthed at least 100 m. of the upper, western end of the causeway. Seven additional trial trenches were dug, following the line of the causeway to the east; traces of this work are still visible. Although no information about the results of these trials was recorded, it may at least be concluded from the evidence of the photographs L 8–9, 231 and 232 that an Osiride statue was found in one of them. Except for the sketches listed above, no plan of the causeway was prepared by the original Expedition. It was therefore decided in the course of the new work to clear the upper end of the causeway and to prepare a plan of the blocks that remained. It would appear that since 1934 the stones have been removed from an area extending 18 m. eastward from the upper end of the causeway. Similar removals resulted in the complete disappearance of the doorway on the southern side of the causeway; for this reason the plans of this feature had to be drawn entirely on the basis of the old photographs (fig. 2).

Despite the deplorable state of the monument, it was possible to determine that the final form of the causeway does not rep-

resent its initial plan, but instead reflects a major change during the course of its construction. The original plan (A) provided for an open street ten cubits wide, paved with limestone slabs and lined on both sides by limestone walls 2 c. thick. The lowest course of these walls still survives to some extent on both sides. Their smooth, carefully patched inner surfaces show that the walls were completed; their full height when finished is unknown, but should not have exceeded 5 c. These original walls would have had a slight inclination; an angle of about 88° is indicated by the inclination of the back pillars of the statues which were added later to stand against the inner faces of the walls (see below). For this reason, the walls should be reconstructed with a saddle-backed coping. Most of the blocks in the lowest course of the original walls are joined with wooden dovetail cramps (pl. 77).

The original design of the causeway did not follow prototypes of the Old Kingdom, but seems instead to have been influenced by the causeway of Mentuhotep Nebhepetra at Deir el-Bahari.<sup>36</sup> This divergence from Old Kingdom models may soon have been perceived as an unacceptable inconsistency and accordingly altered in the second phase of construction (B). One of the alterations was a roof. Spanning a street 10 c. wide with limestone beams was impossible; it was therefore necessary to reduce the width by adding a facing of blocks to the inner sides of the existing walls. As these added layers were 2.5 c. thick, the resulting corridor was only 5 c. wide and could be easily roofed; it also corresponds exactly in measurements to structures of the Fifth and Sixth Dynasties. The new facing has disappeared completely, but photographs taken by the original

<sup>35</sup> Some years ago, the Egyptian Antiquities Organization uncovered parts of the valley temple of Amenemhat I, which are still visible.

<sup>36</sup> Arnold and Winlock, *Mentuhotep* 5–6, 39, pl. 46.

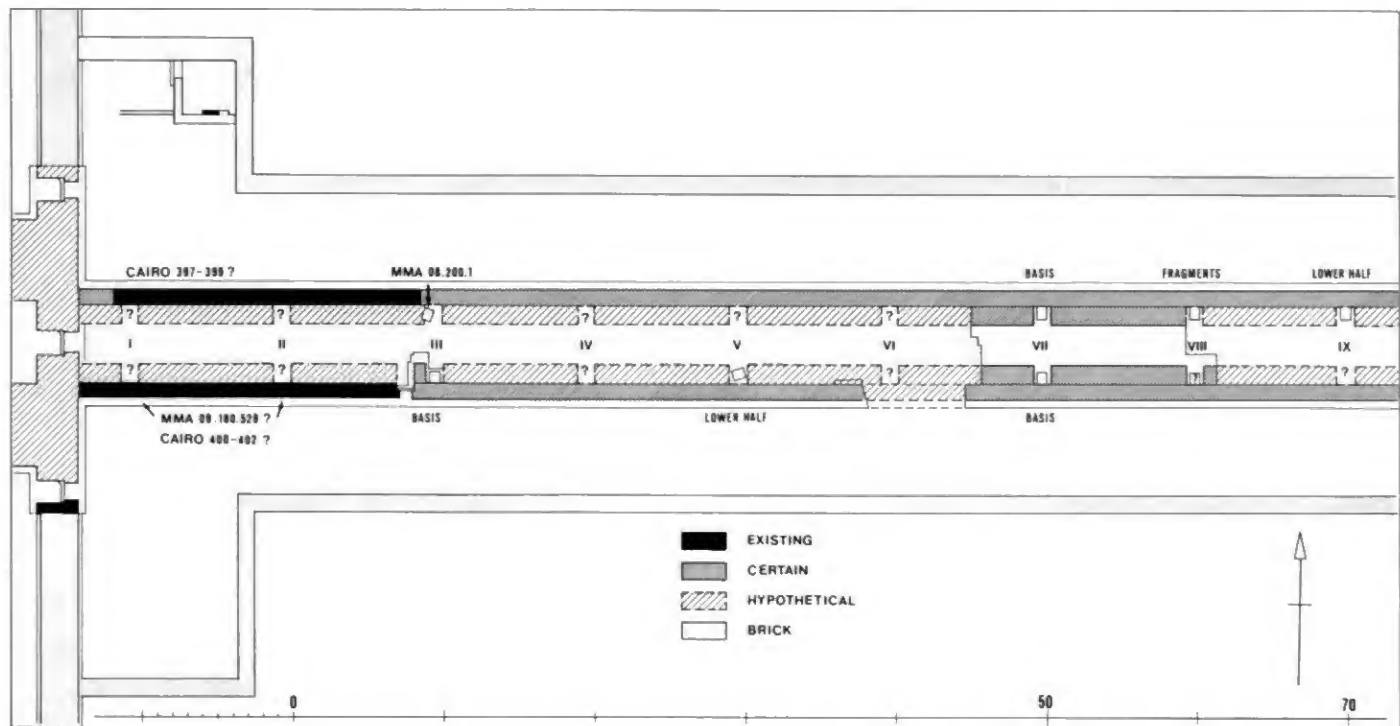


Fig. 1. Upper end of causeway, reconstruction with indication of location of statues. Scale 1:500.

expedition clearly show the cuttings for the bed of the new wall in the pavement belonging to phase A of the causeway (pl. 3c). The photographs also show that the surface of the new wall was interrupted every 10 c. by a niche, the back wall of which was formed by the face of the original phase A wall. In some of the niches, the base and feet of Osiride statues of the king were found *in situ*. These statues were not simply placed on the floor; rather, their bases were sunk into deep holes cut through the pavement, so that they rested on a stone filling on the surface of the underlying rock. Toolmarks on the remaining pavement slabs show that these holes for setting the statues were cut after the pavement was in place. Because the causeway had a considerable slope—more than 6°—while the pavement surrounding the statue bases needed to be horizontal, the older, sloping surface of the road was accordingly cut down 10–15 cm. in a series of horizontal steps on which the statues would stand. The height of the niches is unknown, but to judge from the size of the statues, a minimum height of 5 c. would be expected. The niches are reconstructed with this height on pl. 77.

Another, perhaps intentional, result of the addition of the roof was that the walls of the niches and of the corridor itself could now be decorated. The only evidence for such decoration consists of traces observed by the original Expedition on the back walls of the niches of a red-painted, mottled dado, 87.5 cm. high, which imitated granite. Fragments of wall reliefs found by the Expedition in the area of the causeway were thought to have originated from its walls, but they could just as well have been dragged down to the area from the temple. Unfortunately, no fragments from the triangular sections of walls above the niches exist. They could have provided proof that the causeway was decorated, since triangular wall sections did not exist in mortuary temples.

With so little information available, it is difficult to estimate the height of the walls and roof of the causeway. In accordance with the causeway of Unis,<sup>37</sup> our reconstruction shows the

absolute minimum height of 6 c. (3.15 m.) for the walls and 8 c. (4.20 m.) for the roof. These estimates may, however, be too low; Ludwig Borchardt has suggested walls of 7 c., 5 p. or 8 c., 5 p. for the causeway of Sahure, and of 10 c. for that of Neusera.<sup>38</sup> The Expedition discovered some ceiling blocks which probably belonged in the causeway. These blocks, now lost, were 0.52, 0.62, and 0.74 m. thick; no drawings were made of them, and so the difference in thickness cannot be explained. The lower sides of the blocks showed a slight arch, with a slope of 3 cm. in a length of 85 cm.; the surfaces were decorated with dark blue (sic) stars on a light blue background.

In their original form, the walls of the causeway could not have been integrated into the construction of phase B because their rounded tops would not have fitted into the new masonry; they were therefore probably dismantled as far as was necessary to connect them with the upper parts of the new walls. Their outer faces probably joined the roof with a curve (as reconstructed on pls. 77 and 105), rather than with a torus and cavetto.

About 21.2 m. east of the western end of the causeway, less than 1 m. beyond the third statue niche, the Expedition discovered a door in the south wall of the causeway. No drawing of this feature exists, and the door has since been quarried away; figure 2, therefore, is drawn from photographs as a hypothetical reconstruction of the situation in 1908–1909. The photographs (pl. 4a, b) clearly show that such a side entrance already existed in the older phase A: the groove for inserting the wing of its door is well preserved next to the larger groove for the later door. A section of masonry west of the doorway consists of smaller blocks, indicating that in order to construct the later

<sup>37</sup> S. Hassan, *ASAE* 38 (1938) 519.

<sup>38</sup> Borchardt, *Sahure* 39; Borchardt, *Neuserre* Blatt 7. See also some corrective remarks in Maragioglio, *Piramidi* VII, 106 and VIII, 34.

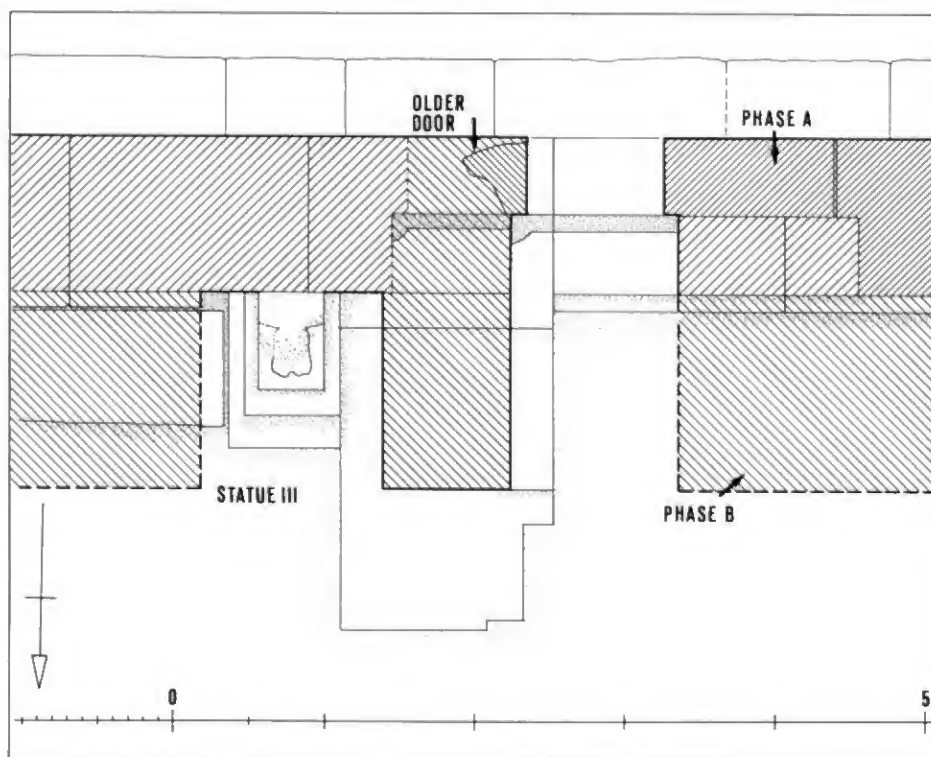


Fig. 2. South exit of causeway as reconstructed from photographs. Scale 1:50. See pl. 4a-b.

door, that part of the wall was dismantled and rebuilt in new blocks of lesser size. The reason for shifting the side entrance was the installation of the statue-niches; the old door would have been blocked by the west wall of the third niche.

The interior width of the new doorway seems to have been 2 c. Because the door opened into the corridor, it should be thought of as an entrance into the causeway rather than an exit from it. Photographs taken by the Expedition seem to confirm the early sketch plan, which does not show a corresponding door in the north wall. Similarly placed doors have been found in the causeways of Djedkara, Pepi II, and Amenemhat III at Dahshur.<sup>39</sup> In these structures, the doors gave access to brick buildings immediately north and south of the causeways which were partially for the accommodation of priests. We know now, since the 1987 season (unpublished), that similar buildings also existed at Lisht.

At Lisht, the side entrance connected the main, stone causeway with a southern, outer lane flanked by a brick wall. The existence of this outer causeway is proved by a section preserved in the south, about 18 m. east of the outer enclosure of the pyramid court. Even better evidence for a second flanking corridor exists in the north, where as early as 1914 the Expedition had excavated parts of the northern brick wall without realizing that it was part of the causeway. The brick walls were 2.5 c. thick and lay about 12 c. from the stone walls of the causeway. Their surfaces were plastered and whitewashed.

About 20 c. from the outer enclosure wall of the pyramid court, these outer corridors widened into courtlike extensions. The northern extension, the cabin (see page 26), was thoroughly studied in 1984-1985. The southern extension is still unexplored, but its existence is proved by the recent discovery of the junction of its south wall with the eastern enclosure wall of the pyramid court. It cannot be determined with certainty whether these outer brick walls belong to phase A or phase B of the stone causeway. That the brick walls come rather late in the sequence of building activities can be seen, however, at the

meeting of these walls with the court wall mentioned above; this wall had already been erected and plastered when the causeway walls were set against its eastern face. A quarry inscription on the subfoundations of the stone causeway shows that its earlier phase A was built about year 22 of the king.<sup>40</sup> Such a relatively late date seems reasonable, since the walls of the outer court and the causeway were probably built only after the completion of the pyramid and its mortuary temple. We do not know when the remodeling of the causeway took place.

There can be no doubt that a wide causeway with three corridors was planned from the beginning, and that only the narrow space between them prevented them from being built at the same time. All causeways of the Middle Kingdom, from that of Mentuhotep Nebhepetra to that of Amenemhat III at Dahshur, were provided with three separate corridors (see list, page 21).

In all the known examples, the two outer alleys are enclosed by brick walls. The central alley of the causeways of Senwosret I and Senwosret III consisted of roofed stone corridors. Those of Amenemhat I and Amenemhat II, and probably also that of Amenemhat III at Dahshur, had at least a central alley paved with stone slabs; it is possible that these slabs also carried roofed stone corridors, but no traces of such constructions have been observed. Statues stood in the causeways of Mentuhotep Nebhepetra and Senwosret I, and the state of preservation of the other causeways is so poor that we cannot exclude the possibility that other examples were also provided with statues.

<sup>39</sup> Maragioglio, *Piramidi VIII*, pl. 13; Jéquier, *Pepi II, III*, 13, fig. 7, pl. 1. The causeways of Meidum and the Mastabat el-Fara'un apparently also had side entrances.

<sup>40</sup> To be published later.

LIST OF CAUSEWAYS OF THE MIDDLE KINGDOM

King	Overall width	Central Lane Width	Side Lanes Width	Outer Brick-walls width
Mentuhotep Nebhepetra <sup>41</sup>	46.00 m. [90 c.=47.25 m.]	31.70 m. [62 c.=32.55 m.]	3.60–3.70 m. [7 c.=3.675 m.]	1.40–1.50 m. [3 c.=1.575 m.]
Mentuhotep Seankhkare <sup>42</sup>	32.00 m. (embankment for a never finished project)			
Amenemhat I <sup>43</sup>	24.30 m. [46 c.=24.15 m.]	5.20 m.(?)	7.60–7.90 m.(?)	1.60–1.90 m.
Senwosret I	22.60 m. [43 c.=22.58 m.]	7.37 m. [14 c.=7.35 m.]	6.27–6.35 m. [12 c.=6.30 m.]	1.30 m. [2½ c.=1.31 m.]
Amenemhat II <sup>44</sup>	20.00 m. (unexcavated but reported to have been “dallée”)			
Senwosret II <sup>45</sup>	(completely destroyed)			
Senwosret III <sup>46</sup>	22.50 m. [43 c.=22.58 m.]	9.20 m. (foundations)	?	3.50 m. (foundations)
Amenemhat III <sup>47</sup>	22.40 m. [43 c.=22.58 m.]	8.55 m. (?)	4.82 m. (?)	2.10 m.
Dahshur		[16 c.=8.40 m.]	[9½ c.=4.99 m.]	[4 c.=2.10 m.]
Amenemhat III <sup>48</sup>	27.00 m. (no interior structure preserved)			3.50 m. (foundations)
Hawara	[50 c.=26.25 m.]			
Mazghuneh-North <sup>49</sup>	43.73 m.	30.00 m.(?) (no interior structure preserved)		
Pyramid	[140 c.=73.50 m.]			

2. The Statues  
(fig. 3; pls. 6–7)

Sources: *BMMA* 3, Sept. 1908, 171, fig. 3 (MMA 08. 200.1);  
4, July 1909, 120 (MMA 09.180.529).  
PHOTOS: L 7–8, 374, 376, 471, 472; L 8–9, 223, 231,  
232, 345–348.

In 1895, Joseph-Étienne Gautier found the well-preserved upper parts of six standing limestone figures which had been broken from their bases at the ankles. They are figures of the so-called Osiride type; three wear the red crown, and three the white.<sup>50</sup> They had been thrown into an unfinished and half-filled tomb shaft near the northeast corner of the inner enclosure wall of the pyramid. The identification of the findspot is problematic because it is not marked on Gautier’s plan. In Expedition photographs 6 LN 19 and 25 there appears a large circular pit, apparently in the state in which Gautier’s expedition left it (pl. 58d). The outline of this pit seems to be marked on AM 2621 (to be published in volume 2). The Expedition termed it “drain pit (*grand cirque*),” and apparently considered it to be the findspot of the statues. It could not have been a drain pit, however, because the Expedition excavated a true drain pit, G, exactly to the south of the “*grand cirque*”; another possible, albeit less likely, drain pit lies farther to the east (drain H). Since the Expedition made no further study of the *grand cirque*, and used it as a dump, we cannot determine if it corresponds to the pit described by Gautier.<sup>51</sup>

The original provenance of the statues could be determined immediately by Gautier, for he had found many fragments of them while excavating the upper, western end of the causeway where a statue base was still *in situ*. It was also observed that the statues had been set up separately from the wall and were affixed to it only by mortar.<sup>52</sup> The Expedition of the Metropolitan Museum re-excavated these fragments and found many more, consisting mainly of the lower parts of the statues and their bases, but also including two more or less complete examples which are now in the Museum (see list below).

We cannot now answer the question of when and why the

six statues found by Gautier’s expedition were broken from their bases and thrown into a pit 140 m. distant. It is clear only that this event was in no way connected with the careful, apparently ritual burial of the ten famous seated figures of the king found by Gautier in another location (see page 56 and pl. 82).

The statues of the king in the niches of the causeway and other examples from his reign represent a type in the repertoire of royal statuary which was, as far as we know, new.<sup>53</sup> It shows the king leaning against a massive dorsal pillar. The mummy-form body should better be termed “undefined.” The arms are crossed over the chest; some of the hands, but not all, are pierced as if to hold scepters or other objects. The king wears a long ceremonial beard and either the white crown or the red, depending on the side of the causeway on which the statue stood, red to the north, white to the south and all without the uraeus. The figures are about life-size and were originally painted, the bases and dorsal pillars pink in imitation of granite, the flesh red-brown, and the crowns red or white. Since their discovery, however, the eight statues have lost most of their paint.

<sup>41</sup> Dieter Arnold, *Das Grab des Jn-jtj.f* (Mainz, 1971) 32–33, pl. 17 b; Arnold and Winlock, *Mentuhotep* 146; E. Graeffe, *MDAIK*, 36 (1980) 188–191, fig. 10.  
<sup>42</sup> Unpublished plans AM 1669 A–C.  
<sup>43</sup> Unpublished plans AM 3200 and 3202.  
<sup>44</sup> De Morgan, *Dahchour*, II, 29, pl. 2.  
<sup>45</sup> W. M. Flinders Petrie (*Lahun* II, 1) thought that no causeway ever existed, which would however, be rather unusual.  
<sup>46</sup> G. Jéquier, *ASAE*, 25 (1925) 56–61.  
<sup>47</sup> De Morgan, *Dahchour* II, 99, fig. 143.  
<sup>48</sup> Petrie, *Labyrinth*, 33.  
<sup>49</sup> Petrie, *Labyrinth*, 55, pl. 49 (wrong scale).  
<sup>50</sup> *Licht* 29, 38, pl. 15 [1]; Gautier, *Fouilles de Licht* 14.  
<sup>51</sup> Gautier reports: “un vaste cirque, dont le diamètre était d’environ trente mètres. Au milieu du sable et des débris qui le comblaient, à 3 m. 50 cent. de profondeur, on rencontra, gisant pêle-mêle, six statues.”  
<sup>52</sup> *Licht* 42.  
<sup>53</sup> Ch. Leblanc, *BIFAO* 80 (1980) 69–89 [Type A]; D. Arnold, *LÄ* IV, 633–634 s.v. “Osirispeiler.”



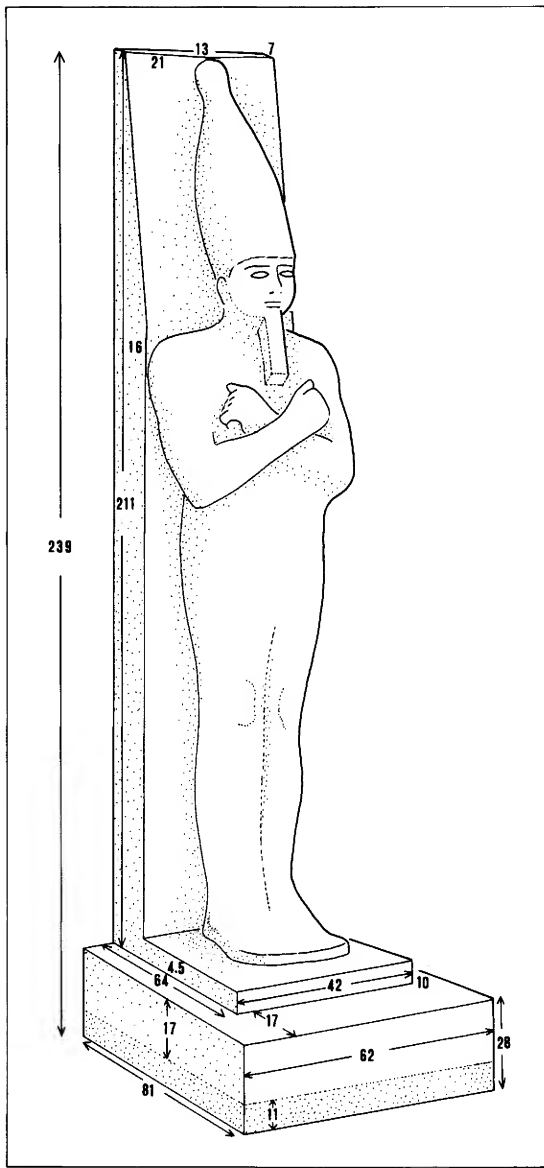


Fig. 3. Measurements of the statues of Senwosret I in the causeway taken from statues MMA 08.200.1 and 09.180.529.

Since the figures were installed in the course of the alteration of the causeway (phase B), they must date rather late in the reign of Senwosret I; the first phase (A) dates to year 22 or later, and so the statues cannot be earlier than year 25. This observation may help to clarify their relationship to the ten seated statues of the king (see page 56), which certainly belong to a considerably earlier stage of the construction of the mortuary precinct.

The purpose of the statues remains unknown. Their position in the shrinelike niches, together with the fact that comparable figures in the temple of Mentuhotep at Deir el-Bahari received offerings, implies that they were not meant merely as decorative elements, but instead were treated more like cult statues. The undefined form of the bodies and the fact that they are uninscribed might indicate that they represented the kingship of Upper and Lower Egypt in its more general aspect.

#### LIST OF STATUES

##### A. Egyptian Museum, Cairo<sup>54</sup>

Six statues from Gautier's excavation 1895. All incomplete from the knees downwards, some more damaged. Considera-

ble remains of the original painting: flesh, red-brown; linen covering body, white; eyes, white with black pupils and blue brows; black beards; dorsal pillars pink imitating granite.

1. CG 397. Red crown, H. 1.40 m.
2. CG 398. Red crown, H. 1.93 m.
3. CG 399. Red crown, H. 1.80 m. (CG pl. 65).
4. CG 400. White crown, H. 1.89 m.
5. CG 401. White crown, H. 1.80 m. (CG pl. 65).
6. CG 402. White crown, H. 1.65 m.

##### B. Metropolitan Museum of Art, New York

1. MMA 08.200.1.<sup>55</sup> The base is shown on photo L 7-8, 376 at the findspot of the statue in niche N III (pl. 6d), third from the west; one would expect it to have had a red crown. The crown, head, left upper arm, and right edge of the dorsal pillar are broken off; the statue is also broken above the ankles. The hands seem to show intentional injuries. The hands, holding a "folded napkin," were still painted when found, as was the dorsal pillar. The front part of the feet, somewhat damaged, had apparently been shaped into toes. Traces of an incised line around the base show that it rose about 17 cm. above the level of the pavement.<sup>56</sup>

Four modern drill holes in the top surface of the irregular break at the neck show that an attempt was once made to separate the dorsal pillar from the body; the base of the statue shows also traces of the same activity. That all these holes could only have been produced with modern drilling tools was ascertained by Denys Stocks of Manchester. Since no such activity is recorded or comprehensible after the arrival of the statue in the Museum, it must be assumed that the drilling took place at Lisht before the shipment of the statue.

2. MMA 09.180.529.<sup>57</sup> According to the records this statue was found "beside the causeway near the top where it had fallen from its niche." Since the statue still wears its white crown, it could only have stood in a southern niche, probably S I or II, as S III was already occupied by another base. If "beside" means outside the causeway, the figure should have been found in the extension of the southern outer lane of the causeway. The tip of the crown, the lower half of the dorsal pillar, and the feet with the base are missing and have been replaced in plaster. The statue was also broken through the chest and below the knees. The face is completely destroyed by intentional injuries. The edge of the cloth around the neck shows that the statue is meant to wear a coat, but without the collar typical of the *sed*-festival dress.

In addition to these eight more or less complete statues the Expedition found at least six to eight bases, some with the feet of the statues or remains of the legs. For their position, see fig. 1. They have since disappeared.

<sup>54</sup> Ludwig Borchardt, *Statuen und Statuetten von Königen und Privatleuten*, Teil 2 (Cat. Gen. Berlin, 1925) 14-16. nos. 397-402, pl. 65; Hans-Gerhard Evers, *Staat aus dem Stein* (Munich, 1929) pls. 31-32; Vandier, *Manuel III*, 174, pl. 59 [5].

<sup>55</sup> *BMMA* 3, Sept. 1908, 171, fig. 3; Hayes, *Scepter I*, 185; Vandier, *Manuel III*, 174; photos L 7-8, 374, 376, 471, 472, 481-483.

<sup>56</sup> The fact that the upper part of the base was visible is also shown by bases found in position; see photos L 8-9, 205, 206 of statue S III, and 209 of S VII.

<sup>57</sup> *BMMA* 4, July 1909, 120; Hayes, *Scepter I*, 185; Vandier, *Manuel III*, 174; Metropolitan Museum of Art, *A Handbook of the Egyptian Rooms* (New York, 1922) 77, fig. 38.



### 3. The Area of the Northwest Corner of the Causeway<sup>58</sup> (figs. 4–10; pls. 8–15, 76–80)

BY DOROTHEA ARNOLD

Sources: Tomb cards 1255–1260.

Diary A.M. Lythgoe, March – May 1914.

A.M. Lythgoe, *BMMA* 10, Febr. 1915, supp., 22.

A.M. Lythgoe, *AE* 1915 IV, 153.

PHOTOS: L 8–9, 360–365 (here pls. 11a, 13a–b); L 13–14, 1010 (here pl. 9a), 1012, 1013 (here pl. 22b–c), 1019 (here pl. 10b), 1020 (here pl. 9b), 1022 (here pl. 10a), 1186 (detail here pl. 8a), 1290 (similar to 1020).

PLANS: AM 2662 (1:200, here used for pl. 80).

#### I. GENERAL REMARKS

The presentation of the remains east and northeast of the northern gate must start with the realization that their description in the preliminary report by Lythgoe is misleading. One cause of confusion is that the remains east of the north gate have been too closely connected with those further to the east and northeast, where the mastaba of Imhotep lies.

A look at the plan (pl. 80) shows immediately that no house-walls, as described in the preliminary report, were found south of the Imhotep precinct. There are in this area a number of tomb shafts, but otherwise the space is largely unexcavated. Anything deserving the name of house is found further southwest. Here—and indeed just outside the northern gate—a single-room structure, the cabin, was found built into the inner corner of the causeway widening.

Lythgoe's confusion about the relative position of the cabin, Imhotep precinct, and northern gate resulted in an equally confused account of the context in which the various finds were made. The plan (pl. 80) shows clearly that there was no single dump outside the northern gate, but actually four separate spots where finds came to light. Pottery in great quantity was found in the two dumps east and northeast of the cabin (marked "Pottery" in pl. 80). As we shall see, these dumps contained little but potsherds, some bones, flints, and a number of pieces of wood. The seal impressions (marked "Seals" in pl. 80) were found at a considerable distance from these sherd dumps just south of shaft 5119. This seal impression locus does not seem to contain pottery in great amounts. The photograph L 13–14, 1034 shows mainly layers of earth and limestone chip material, and the tomb cards note a number of small objects (amulets, bone objects, a clay calf's head, some flint and bone instruments), which lend quite another character to this dump.<sup>59</sup>

The statuette of Mentuhotep,<sup>60</sup> according to Lythgoe's diary, was found April 7, 1914 "in ghedim [sic] near shafts of big tomb 3" (Imhotep). In the light of what we know about the progress of work, this comment can only mean that the statuette was either found with the seal impressions or someplace near shafts 5105, 5107, 5120 or 5121. The statuette therefore also has nothing to do with the northern gate area. With respect to the *shabtis* (there was in fact an earlier find of a second such object; see page 34), we shall presently see that they were found buried in the pavement of the small court in front of the northern gate. Between them and both pottery dumps as well as the seal impression locus was a thick and high wall (pl. 80, "Bener" and "Wahnoferhotep").

The fusion established in the preliminary report of the pottery dumps, the seal-impressions locus, the find of the *shabtis*, and

the other objects mentioned afterwards became firmly rooted in the minds of the excavators and consequently found its way into most publications dealing with these objects. Lansing, who in a letter to Winlock of April 11, 1932 had reported quite correctly the additional find of seal impressions "south of the Imhotep mastaba," subsequently reverted in publication to the placement of the seal-impression locus "north of the main entrance to the pyramid temple"<sup>61</sup>

Concerning the *shabti* of Wahnoferhotep, Hayes, in his *Scepter of Egypt*,<sup>62</sup> rectified the statement of the preliminary report, no doubt after having checked the photographs (here pl. 11b–d). He rightly describes the coffin which contained the *shabti* of Wahnoferhotep as "evidently deposited by reverent hands not thrown out by tomb robbers." But in a recent publication<sup>63</sup> one reads again that the *shabti* in its box was found in a "mound of debris."

In view of this confusion, it seems best to start again with a basic description of the remains.

#### 2. THE NORTHERN GATE

The presence of the northern gate as a counterpart to the better-preserved southern gate<sup>64</sup> is attested by one limestone block still *in situ* and a number of others found by the Expedition in 1914 (pl. 9a). The sill of the gateway shows traces of wear as well as marks of fire (pl. 76) in the form of black and purple stains. A square hole chiseled into the stone about 10 cm. from the northern jamb and slightly to the east of the middle of the sill is about 6 cm. wide and 11.5 cm. deep. The function of the hole must have been to hold a wooden peg that kept the door open while people passed through the gateway with their hands full of goods.<sup>65</sup> Thus the northern gate appears to have been a

<sup>58</sup> In order to facilitate the understanding of the rather complicated complex of structures in the northwest corner of the brick causeway, a list is given here of the main structures or parts of structures and the terms used to describe them (compare also pl. 76):

*brick causeway wall*: brick wall bordering outer lanes of causeway

*cabin*: single-room structure built into northwest corner of northern brick causeway wall

*causeway lane(s)*: space between stone causeway walls and brick causeway walls

*causeway widening (northern)*: area northeast of northern gate surrounded by north wall and east wall (there is also a *southern causeway widening* southeast of the southern gate)

*east wall*: portion of the northern brick causeway wall that borders the causeway widening and the cabin on the east side

*enclosure wall*: brick enclosure surrounding outer court of royal pyramid complex

*hidden chamber*: enclosed chamber in the east wall

*northern gate*: limestone gateway leading from the northern causeway lane into the outer court of the pyramid complex

*northern lane*: causeway lane on the north side

*north wall*: portion of the northern brick causeway wall that borders the northern causeway widening on the north

*south wall*: portion of northern brick causeway wall southeast of the causeway widening

*wavy wall*: undulating wall leading eastward from the outer northeast corner of the causeway widening

<sup>59</sup> This area will be dealt with in detail in the forthcoming publication of the Lisht South Cemetery.

<sup>60</sup> Cairo 44960, MMA photo L 13–14, 1355; the statuette will be published in a forthcoming volume on the Lisht South Cemetery.

<sup>61</sup> *BMMA* 28, April 1933, II, 21. See also Hayes, *Scepter* I, 191, 193.

<sup>62</sup> Hayes, *Scepter* I, 349–350.

<sup>63</sup> Schneider, *Shabtis* I, 183. The blame for this incorrect statement lies entirely with the confusing preliminary reports.

<sup>64</sup> These gates will be described in detail in the second volume of this publication on the pyramid of Senwosret I.

<sup>65</sup> Cf. Arnold and Winlock, *Mentuhotep* 13, fig. 4; P. Anus, *Kêmi* 19 (1969) 222–226, fig. 1 and 3.

frequently used thoroughfare. It is impossible to determine whether the marks of fire on the sill show that the door was eventually burned down, or indicate that the stone slab was used as a base for cooking fires in times when temple and precinct had fallen into disuse. There are traces of gypsum mortar over the smoke stains which are difficult to explain.

### 3. THE BRICK ENCLOSURE WALL OF THE PYRAMID PRECINCT

The entire length of the enclosure wall of brick will be described elsewhere.<sup>66</sup> For the present purpose it is enough to state a few facts relevant to the structures and walls in the area under discussion.

- A. Several photographs taken by the Expedition in 1914 which show the enclosure wall north of the northern gate from the west (pl. 8b; also L 13-14, 1186, 1205, etc.) enable us to see that there was a cleanly cut gap in the foundations of the wall about 2.70 m. north of the northern gate. This gap does not appear on the eastern face of the wall (pl. 11d). It seems, therefore, that a niche was built into the foundation of the enclosure opening to the west.
- B. The foundation of the enclosure wall just mentioned consisted of 5 courses of bricks. On the west and east faces the foundation was half a brick (i.e., 18 cm.) broader than the wall above it (pls. 8b, 11d).
- C. The wall is 2.60 m. (5 c. = 2.625 m.) thick at the foot above the foundation. A height of roughly 10-12 c. or 5.25-6.30 m. would be appropriate for a wall of this thickness.
- D. After the enclosure wall was completed, both faces were plastered and whitewashed.

### 4. THE BRICK CAUSEWAY WALL

About 15 m. north of the northern stone causeway wall (pl. 74) the brick causeway wall abuts the brick enclosure wall. At foundation level, the bricks of the brick causeway wall are laid on top of the protruding foundation of the enclosure wall; higher up, the causeway wall covers the whitewashed outer face of the enclosure wall. The causeway wall is therefore later than the enclosure wall. Whether "later" means just after the enclosure had been finished, or many years later, must be determined by other evidence.

The fact that the northern gate was built into the enclosure wall from the outset suggests that some kind of outer causeway lane was planned from the beginning; nonetheless, there are some incongruities between the outer causeway lanes and the two side gates. Because the northern and southern causeway walls were laid 12 c. (6.30 m.) from the stone causeway walls, they would have run directly into the southern and northern gates. It was therefore necessary to shift the brick walls at some point before they reached the gates. Short sections of right-angled walls were accordingly added, resulting in two courtlike areas in front of the two gateways. The creation of these widenings seems to have been so desirable that the architects dismissed the obviously easier solution to the problem: that is, to widen the whole length of the causeway lanes from 12 to 14 c.

The north and south widenings are of unequal width. The northern one is 15.60 m. (30 c. = 15.75 m.) wide; the southern seems to be 35 c. (18.375 m.) wide. As a caveat it must be added that the excavation of 1984 revealed only 3 bricks of the westernmost end of the southern brick causeway wall (pl. 76). These were enough to prove the existence of the wall at this point,

especially since further east considerable remains of the same causeway wall could be identified. Additional excavation in the hitherto unexcavated area just east of the southern gate might reveal the cause of the greater width of the southern court.

Another difficulty the builders faced when planning the brick causeway wall arose from the difference in ground level. The foundation of the enclosure wall rests on the *gebel* at least in the area where the causeway wall abuts the enclosure (height below NN: -0.90, see pl. 74). Three meters further east, the ground starts to slope downwards, at first gently (from -0.95 to -1.30), then, from a point about 6 m. east of the enclosure, more steeply (-1.30 to -1.93). Where the east wall encloses the causeway widening, the natural ground level is more than 1 m. lower than at the east face of the enclosure (pl. 74 and pl. 78a, section A-B). It was necessary to adjust the position of the north wall around the causeway widening accordingly; its foundations are almost 1 m. deep at the northeast corner of the causeway widening, while near the enclosure wall the wall rests more or less directly on the *gebel* (pl. 79c, section I-K).

The northeast slope of the ground level is much less pronounced, at least as far as the *gebel* is concerned; it slopes just under 20 cm. from -1.95 north of the north wall to -2.14 south of the south wall (pl. 74). That the final floor levels in the area east of the causeway widening differed considerably is due to the fact that the floor at the northeast corner rests on a heap of broken limestone that had been dumped previous to the construction of the brick wall in this area (see section I-K, pl. 79c, and page 31).

The brick causeway wall sloped in the usual way on both faces; any statement about the width of the wall must therefore take into account the height at which it is measured.<sup>67</sup> At the foot of the wall, where it rests on the protruding foundation of the enclosure, the brick causeway wall is 1.40 m. wide (2 c. 5 p. = 1.425 m.). At the height of the pavement inside the cabin, the wall is 1.23 m. wide (2 c. 2 p. = 1.20 m.). A wall of this width should, in accordance with what is usually found in Egyptian architecture be 7 c. high (3.67 m. or roughly two and one-half times the width).

As is usual in Egyptian brick constructions, the size of the bricks and the pattern in which they are laid varied in order to compensate for the sloping ground and the batter of the wall. Low in the foundations near the northeast corner, large bricks of 39 x 18 x 13 cm. were used, while higher up in the wall the bricks are for the most part 34 x 16 x 11 cm. In order to compensate for the batter, the wall also has large mortar-filled gaps between the bricks, as well as sections laid in a herringbone pattern (pl. 74).<sup>68</sup> At the northeast corner, the wall was strengthened by bundles of reeds laid between the courses (pl. 12a).<sup>69</sup> At the southwest corner, the plan shows a kind of buttress placed against the west face of the south wall (pl. 74). This buttress is not bound into the wall; furthermore, it rests on the lower of the two floors, which covered the causeway lane (see page 25). It therefore seems reasonable to assume that the buttress was a somewhat later addition and that its function was

<sup>66</sup> In the second volume of this publication.

<sup>67</sup> A disregard for this fact resulted in the difference in width between the western part of the north wall and the eastern part north of the cabin that appears in the plan of the Expedition, here pl. 80. The surveyors must have measured these two sections at different heights. The wall is in fact equally wide all along its length. See pl. 74.

<sup>68</sup> Alan Jeffrey Spencer, *Brick Architecture in Ancient Egypt* (Warminster, 1979) 138, type A nos. 17-18, pls. 8-9.

<sup>69</sup> Ibid., 134-135.

connected with the sloping of the ground level in the area around the southwest corner.

After all the walls around the causeway widening were completed, the ground was filled in, the floors were prepared, and the faces of the walls above ground were plastered and whitewashed (pls. 9d, 11d).

##### 5. THE "HIDDEN CHAMBER" IN THE EAST WALL

In the center of the east wall of the causeway widening, a square closet of moderate size (60 x 60 cm. = roughly 1 c. x 1 c.) was built into the wall (pls. 74, 10c). The arrangement of bricks around this closet shows that it was not cut into the masonry at a later time, but built while the wall was being constructed. Only its western side wall is divided by joints from the rest of the wall. Any objects put into the closet must therefore have been inserted either from above, during construction, or from the west.

The floor shows very rough patches of silt mortar, but there are now no remains of either plaster or gypsum whitewash on the walls of the chamber. The plaster could equally have disappeared in antiquity or in the years since 1914.<sup>70</sup>

This built-in chamber has a striking parallel in the one in the enclosure wall of the mastaba of Imhotep.<sup>71</sup> It seems furthermore to repeat the nichelike feature of the enclosure wall (pl. 8b). That niche too could well have been closed from the west to create another "hidden chamber." It should be noted that both closets in the area under discussion here are situated almost precisely on an east-west line; indeed, it seems as if the two chambers were part of a system. There is, nevertheless, one difference between them: the chamber in the east wall is situated at floor level, while the one in the enclosure lies inside the foundations.

There is no possibility of knowing what the two chambers in the enclosure wall and the wall east of the causeway widening contained. The parallel to the chamber of Imhotep would suggest some kind of funerary equipment<sup>72</sup> with strongly protective functions.<sup>73</sup> The outer enclosure may have been deemed to be in special need of magical protection.

Half a meter north of the hidden chamber, a round hole is cut somewhat obliquely through the east wall (pls. 74, 10d). In this case the secondary character of the hole is clearly indicated by bricks that have been cut in half; there can be no doubt that this hole was made for a drain which was pushed through the wall as an afterthought. Its purpose and arrangement will be commented on in connection with the cabin (page 29).

##### 6. THE AREA IN FRONT OF THE NORTHERN GATE

While the northern part of the causeway widening had a level floor on which the cabin was eventually erected (see page 29), the southern part, which was directly in front of the northern gate, had a sloping floor and should be understood primarily as the uppermost part of the causeway lane. This westernmost part of the northern causeway lane rested in large part on fill (pl. 9d), not on conglomerate *gebel* like the lane between the two stone causeway walls (pls. 5a, 76). The area was not cleared in 1984. But photographs taken during the work in 1914 (pl. 9b and L 13-14, 1199, 1289-1290) as well as later, in 1923 (6 LN 33), show that the natural ground was cut by a ravine just north of where the stone-bordered causeway was later erected. The builders may have used this gully in the beginning for easier ascent to the pyramid plateau. They later filled it with various layers of earth and stone chips so that finally the

floor was about the same height as the one inside the stone causeway walls. Plate 9b shows not only the layers of the fill, but also an interesting find that was made in 1914 at a rather low level. The large beam visible in the photograph is of the same kind as others found in many places at Lisht. All beams of this size and shape came from dismantled ships, and were used to strengthen building and transport roads.<sup>74</sup> The discovery of such a beam in the ravine east of the northern gate could be accidental, but could also mean that originally a transportation road or ramp led up the gully to the plateau.

The ground above the abandoned road or ramp was later covered by layers of earth and chip (pl. 9b). Further east, similar but less deep layers were deposited against the foot of the brick causeway wall.

The section reproduced as pl. 9d shows the following strata listed here from bottom to top:

- a – *tafl* on which the wall seems to stand in this area
- b – two horizontal, well-leveled layers of limestone chip with a thin mud layer separating them
- c – thick layer of larger limestone pieces mixed with earth
- d – mud floor, extending onto the plaster and whitewash on the wall
- e – loose mud and earth mixed with some sand
- f – second mud floor, much worn on its upper surface.

These strata tell the following history of events in the area south of the brick causeway wall. The wall was erected on a fill of *tafl* which was presumably used to raise the level of the ravine north of the stone causeway walls. After the brick wall was completed, the ground above the *tafl* was further raised by a fill of limestone chip, mud and larger limestone pieces mixed with earth until the causeway lane had the desired height. Subsequently the part of the wall that remained above ground was plastered and whitewashed. Only then the final floor of the lane was established by a coating of fine mud which became solid after it had dried. This first floor, however, did not see long service. Sand and mud accumulated quickly against the wall, and finally a second mud floor was spread, which seems to have served for a longer period, to judge from the signs of wear on its upper surface.

The buttress against the west face of the brick causeway wall which was mentioned above (page 24) was erected on the first of the floors [d], and is therefore earlier than the second floor. The difference in height between the uppermost floor level just west of the section shown in pl. 9d (pl. 74: -1.55 below NN) and the *gebel* east of the enclosure (pl. 74: -0.90 below NN), indicate clearly that the northern causeway lane rose steadily towards the northern gate.

<sup>70</sup> At present, the chamber is surrounded by 4 courses of bricks on the north and west sides, by 3 courses on the south, and by 2 courses on the east (see pl. 10c). In 1914, the wall around the chamber seems to have been ca. 1 m. high. Even the roofing seems to have been partly preserved (pl. 8a). The condition of the site shown in photographs of the 1923-1924 season (photo 6 LN 33) suggests that the main destruction took place before 1923.

<sup>71</sup> Compare *BMMA* 10, Feb. 1915, Supp., 13-15, figs. 8-13 and the forthcoming publication of the Lisht South Cemetery.

<sup>72</sup> S. B. Johnson, *JARCE* 17 (1980) 11-20, points out important functional features of the group (see also Ursula Koehler, *Das Imiut* (Göttinger Orientalforschungen 4; Wiesbaden, 1975). The date put forward by Johnson, however, does not fit the archaeological context, which will be discussed in detail in the forthcoming publication of the Lisht South Cemetery.

<sup>73</sup> W. Gutekunst in *LÄ V*, 746-749 s.v. "Schutz," with references.

<sup>74</sup> For now see *BMMA* 19, Dec. 1924, II, 39, fig. 8; a detailed discussion is forthcoming.

# 7. THE NORTHERN PART OF THE CAUSEWAY WIDENING BEFORE THE ERECTION OF THE CABIN

In the northeast corner of the causeway widening was located a houselike structure, the "cabin" (pl. 74), which was the result of a final modification to the area. Two previous phases of use of this particular corner of the causeway widening have been recognized on the basis of several sections that were studied during the 1984/85 season at Lisht. These sections are designations "A-B," "C-D," "E-F," "G-H," and "I-K" (pls. 74, 78a-b).

Only the top three of the preserved courses of the wall are plastered and whitewashed (pl. 78a: 8). This fact, as well as the nature of the strata (9) below the plaster, shows that up to the height of stratum 7 the lower courses served solely as a foundation. The strata to the left of the wall with the number 9 in pl. 78a are fill material, clearly derived from building activities. The lowest layer of fine limestone chip rests directly on the *gebel*. Above this layer is another of coarser limestone pieces mixed with broken bricks. Farther west appear large lumps of mud topped by limestone chip and broken brick.

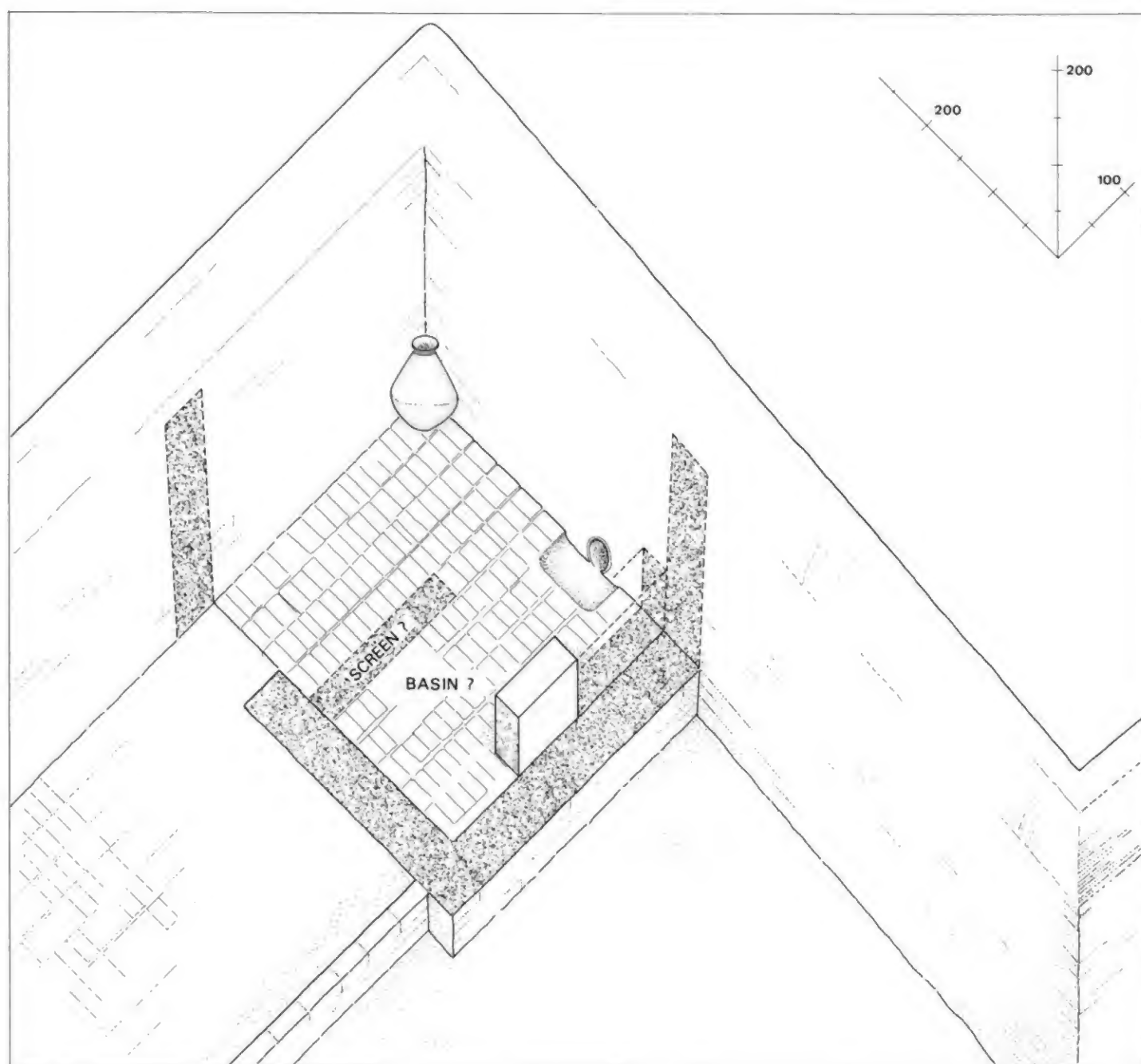


Fig. 4. Isometric reconstruction of the priests' bath in the north extension of the outer causeway lane. See pl. 74.

Section A-B (pl. 78a) shows at the extreme right (11) the west face of the wall which encloses the causeway widening on the east side. To the west of it (i.e., to the left of the drawing), the *gebel* rises steadily (see above, page 24). On the west side the wall is built into a heap of hard silt mortar (pl. 78a: 10), the hardness of which suggests a high percentage of clay,<sup>75</sup> undoubtedly because the builders needed a secure footing in order to prevent the wall from slipping down the slope.

The fill material of stratum 9 is topped by the floorlike stratum 7, which consists of compacted Nile mud. Stratum 7 is fairly thin near the wall and much thicker at the western end, where it reaches 12 cm. in thickness. Farther west the stratum

<sup>75</sup> For "clay mortar" see Alfred Lucas, *Ancient Egyptian Materials and Industries* 4, rev. J. R. Harris (London, 1962) 75.

was removed by the excavation of 1914. From photographs (pl. 11 a-d) we know that a brick pavement either covered stratum 7 in the area between the cabin and the brick enclosure of the pyramid precinct, or was laid flush with stratum 7.

Section A-B shows clearly that the upper surface of stratum 7 bore a shallow depression which was filled by material of quite a different consistency (pl. 78a: 6). The section also shows that there was another shallow depression in stratum 6, which in turn was filled by stratum 5. The material of stratum 6 is gray sand with some limestone chip and tiny sherds, while 5 consists almost exclusively of angular particles of dark green diorite of sizes ranging from powder up to pieces of 2–3 cm diameter.<sup>76</sup> The fresh surfaces of the rock fragments indicate that they were shaped in an activity such as cutting and drilling; the object(s) produced could have been stone vessels, canopic chests, or small statues. The presence of this material as a dense accumulation in a circumscribed area makes it highly improbable that the material was dumped where it was found. The only reasonable explanation is that some activity was performed at this particular place which involved the working of diorite.<sup>77</sup>

The shape of the depression formed by mud stratum 7 in section A-B strongly suggests that it was deliberately made by digging into the stratum, which would originally have been as thick throughout as it now is only at its western end. An alternative interpretation of the shape of stratum 7 is that the depression was designed from the beginning; in this case, the Nile mud would have been spread intentionally more thickly in the west than in the east.

The depression thus deliberately formed was evidently first filled by a mixture of sand, small chips and tiny sherds (stratum 6). This fill gives the impression of being building refuse, either accumulated at some time previous to the work in hard stone or brought to the spot from some other place in order partly to fill the depression and thus create a surface for the activities which left the crushed diorite of layer 5.

A single post-hole found in the subfoundation slabs west of the later cabin (pl. 74, center, left of the cross marking -0.98) might give some clue to what the corner of the northern causeway widening looked like when the manufacture of hard stone objects was under way. The post-hole could well have held one pole of a canopy erected to provide shade for the workers.

After use as “sculptors’ atelier,” the area was covered by a new mud floor (pl. 78a: 4) which hid all the refuse left by the previous work. This upper floor is very similar to the one below; again, the mud layer becomes thicker towards the west. The east wall (11) was again plastered and whitewashed after the second mud layer (4) had been applied (the double layers of plaster on the face of the wall are visible above the level of stratum 4 in pl. 78a).

What went on above mud stratum 4 is best studied with the help of sections E-F and G-H (pl. 79a-b below). Section A-B shows that the mud layer of stratum 4 was eventually covered by a layer (3) of a gray powdery substance, small chips of limestone, and many pottery sherds. The sherds were especially numerous near the wall (for this pottery see page 120, figs. 63ff.). The situation is best explained if the sherd material is understood as fill above stratum 4; the pottery found here is therefore contemporary with the layers above it. These (pl. 78a: no. 1) comprise the brick pavement and south wall of the cabin, which will be described below (page 29).

Section E-F (pl. 79a) presents the strata directly below the pavement of the cabin, seen from the west. The lowest stratum immediately above the *gebel* is not shown because the Expedi-

tion did not remove the heavy subfoundation slabs (9) that seem to be its main feature (see also pl. 9c). Above the limestone slabs (9) lies a hard-packed accumulation of yellow sand (8). The upper level of this sand layer is rather uneven and cannot have served as a floor. Again, this sand layer, as well as the limestone chip layer (7) above it, must be understood as fill. Only layer 6 has the appearance of a floor, although not a very even one. Layer 6 consists appropriately of compacted mud. The upper surface of this stratum (6 in section E-F pl. 79a: -0.71 to -0.73 below NN) corresponds well with the upper surface of stratum 7 in section A-B (pl. 78a: -0.75 below NN) at the western end.

The most striking features in section E-F (pl. 79a) are the two wedge-shaped masses of mud (pl. 79a: 3 left and right) on top of stratum 6. These border an unmistakable basin. The upper surface of the southern wedge-shaped mud accumulation (-0.67 below NN) again corresponds well with the upper surface of stratum 4 (also a mud accumulation) in section A-B. In the center of the basin in section E-F three rows of large bricks are cut by the section. Between the bricks is found sand, some light gray powder and a number of pieces of charcoal. To the north of the northernmost large brick are a series of round balls of gypsum and more light gray powder. The upper part of the basin is filled by many pottery sherds and some pieces of wood which form an even surface on which the bricks of the pavement of the cabin rest.

In summing up the comparison of the layers in section E-F with the strata of section A-B, we see that the fill, which in A-B is seen resting on the *gebel* (pl. 78a: 9), is equivalent in section E-F (pl. 79a) to the large limestone slabs (9), the yellow sand (8) and the limestone chip (7). The mud stratum 6 in E-F seals this fill off, as did the equivalent stratum 7 in A-B, on which the stone cutters worked as seen in section A-B. Little remains of the traces of their work in section E-F; only some sparse traces of the angular dark green fragments of diorite can be observed in the lowest layer of the mud accumulation 3 (pl. 79a: below 3). It seems that the preparation of the basin between the wedge-shaped mud embankments in section E-F destroyed almost all traces of the previous activities directly below the cabin pavement. As stated above, the mud embankments and the basin in section E-F are equivalent to stratum 4 in section A-B.

Section E-F now allows us to say more about what occurred in the area when the refuse of the stone workers had been covered over. At its northern end, the basin between the two wedge-shaped embankments (3) in section E-F has a distinctive lining that covers the mud floor as well as the triangular “wedge” attached to the south face of the wall. This lining consists of gypsum and ashy gray powder (pl. 79a: 11); on top of it are seen some round balls of gypsum.<sup>78</sup> In order to examine this interesting basin and its interior further, two rows of bricks from the pavement of the cabin were removed (pl. 74) so that a part of the floor underneath could be seen and the section G-H could be drawn (pl. 79b). It was discovered that the gypsum lining continued under the pavement of the cabin.

The upper surface of the lining on stratum 3 is not at all even (pl. 79b: 6); in fact it undulates in a remarkable way which can

<sup>76</sup> The stone was identified by George Wheeler of the Department of Objects Conservation of the Metropolitan Museum of Art, to whom we would like to express our gratitude.

<sup>77</sup> For more sculptors’ activities east of the pyramid complex, see the forthcoming publication of Lisht South Cemetery.

<sup>78</sup> For “gypsum mortar” see Lucas, op. cit. (supra n. 75), 75.



only be explained by the action of human hands which manipulated the gypsum in the basin. At the place in the drawing pl. 79b where the number 7 appears, the dried gypsum had apparently been broken to reveal a lower layer. In short, this place seems to be a basinlike installation where gypsum was prepared for the use of sculptors or masons. What seemed to be at first sight a "lining" thus turns out to be an accumulation of material that was worked in the basin. Presumably the gypsum was brought to the basin to be mixed.<sup>79</sup> Gypsum was widely used in finishing stone buildings. Uneven surfaces were filled, and stones for repairs fitted and fixed with it. Gypsum was also used in the preparation of paints for walls as well as in the whitewashing of brick masonry.<sup>80</sup> New Kingdom sources provide a variety of facts about the work, status, and life of gypsum-workers.<sup>81</sup> The area of the northern gate at Lisht South now adds information for the Middle Kingdom.<sup>82</sup>

There can be little doubt that the material above the gypsum was deposited after the basin had fallen into disuse. At the southern end the fill consists predominantly of loose, dark-gray dust, small limestone chips, and some sherds (pl. 78a, no. 3; pl. 79a, no. 2). At the northern end, sherds are more numerous and in some places are tightly packed (pl. 79a, above no. 11; pl. 79b, left of 2 and below 4). In the center, more varied materials were used to fill the basin. Section E-F (pl. 79a) shows the two rows of large bricks mentioned previously which rest on fill. The central brick (pl. 79a, left of 4) rests on a layer of compacted yellow sand. Between the rows of bricks were found gray sand and powder, on top of which were pieces of charcoal (pl. 79a, above no. 4). Most informative with respect to the activities originally carried out in the area was the discovery of a number of wooden instruments which had been deposited in partly broken condition at the western end of the basin seen in section E-F (pls. 79a, 12b). These wooden instruments (fig. 5; pl. 12d,f) were laid down in an orderly manner side by side on top of sherds and gypsum refuse. The following items are of particular interest:

a-b. Two thick pegs (pl. 12d): L. 27.5 cm. and 17 cm.<sup>83</sup>

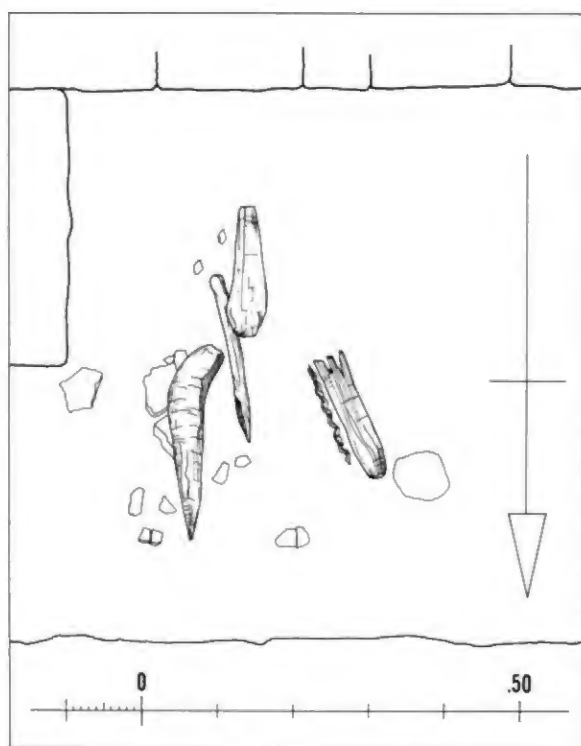


Fig. 5. Position of objects found below the floor of the priests' bath. Scale 1:10. See pl. 12b.

- c. A flat, spatulalike instrument (pl. 12f, bottom row): L. 15.5 cm. Next to this piece were remains of a thin rope (fig. 5).<sup>84</sup>
- d. A thinner, sharply pointed, piece of wood (pl. 12d, top): L. 12.5 cm., carefully prepared.<sup>85</sup>
- e. A small, thin piece of soft wood (pl. 12f, second from top): L. 6.5 cm.; W. 0.6 cm., with four indentations on one side, one end narrowed to a round point. Traces of gypsum adhered to the piece.<sup>86</sup>
- f. Finally, there were various pieces of wood with burned ends (pl. 12f, uppermost and middle): L. of both, 11 cm.<sup>87</sup>

All these instruments can be connected in some way to building activities, especially the pegs and markers (nos. 1-2, 4, 6). It seems therefore that the basin was filled in not long after it fell into disuse, with the result that broken instruments from the same activities with which it had been associated were buried in the fill. The pottery could either have contained provisions for the same workmen or discards from ongoing cult activities (see page 120).

A final word must be said about the small wall which appears at the eastern end of section G-H (pl. 79b:3). The two bricks seen are well positioned, one above the other, and therefore most probably belong to a wall. Since the lower brick rests on the floor of the basin, it is possible that the wall was contemporary with the use of the basin. It could have served as a kind of bench, or it could have marked the eastern end of the basin in the same way that the large brick wall in section E-F marked its southern side (pl. 79a). The small wall could also, however, belong to some installation connected with the gypsum preparation, although if it were part of a kiln one would expect signs of burning. Further information about this wall might be obtained by the complete removal of the cabin pavement.

<sup>79</sup> Cf. gypsum balls found at Amarna: A. F. Hallimond in John D. S. Pendlebury, *The City of Akhenaten III* (Memoirs of the Egypt Exploration Society 44; London, 1951) 243-244, with additional remarks by H. E. Cox, 244, and further notes by O. H. Myers, 244-245.

<sup>80</sup> C. R. Traunecker in *LÄ II*, 599 s.v. "Gips."

<sup>81</sup> Jaroslav Černý, *The Valley of the Kings* (*BdE* 81; Cairo 1981) 35-40.

<sup>82</sup> For a possible reference to gypsum in the early Middle Kingdom, see William Kelly Simpson, *Papyrus Reisner I* (Boston, 1963) 75. It is hoped to present some analyses in the chapter on building methods in the second volume of this publication.

<sup>83</sup> The shorter one (pl. 12d middle) could also be a handle, although the "slot" that appears in its end might well be due to the shrinkage of the wood. For similar handles of tools, see Hayes, *Scepter I*, 289, fig. 190; *Scepter II*, 85, fig. 47; Peet and Woolley, *City of Akhenaten I*, pl. 19. 2, 3. The top piece in pl. 12b is much too pointed to be a handle; possible parallels for it are: B. Bruyère, *Rapport sur les fouilles de Deir El Médineh, Années 1948 à 1951* (Cairo, 1953) 88-89, figs. 24-25.

<sup>84</sup> This could be the broken-off part of the handle of a brush: Cf. Somers Clarke and Reginald Engelbach, *Ancient Egyptian Masonry, The Building Craft* (London, 1930), fig. 165d. Note the flat shape of the handles of the long brushes.

<sup>85</sup> This piece can, of course, be compared to the thin part of the hue, cf. W. M. Flinders Petrie, *Tools and Weapons* (British School of Archaeology in Egypt and Egyptian Research Account, Twenty-Second Year, 1916. London, 1917) 54, pl. 68. In that case, however, the outer end would be worn, whereas here the shape is quite round.

<sup>86</sup> This piece brings to mind not so much weaving hooks, which usually have finer indentations (Petrie, *Tools and Weapons* pl. 66) as some agricultural rakes (pl. 69). These were used, according to Petrie (54) to drag fine mud over the seeds. Could the small piece here shown have been used to smooth gypsum surfaces?

<sup>87</sup> The thicker pieces of this kind could be torches: Bernard Bruyère, *Rapport sur les fouilles de Deir El Médineh Années 1948 à 1951* (Cairo, 1953) pl. 19. The thin piece with the pointed end, however, must have been blackened in order to be used as black "pencil."

## 8. THE CABIN AND ITS FUNCTION

All the sections which have been discussed (pls. 78–79) show that at some point the various workmen's activities came to an end and a brick building, here called the cabin, was erected inside the corner of the causeway widening. This chamber used the causeway walls as its northern and eastern boundaries. Thinner walls were added in the west and south (pl. 74). When the Expedition uncovered the structure in 1914 (pl. 8), two courses of the south and four courses of the western wall were still preserved.

According to the plan prepared by the Expedition (pl. 80), the south wall of the cabin was 0.60 m. thick, the west wall 0.70 m. The doorway through the north end of the west wall is securely attested (pl. 8b), and was 0.80 m. wide. A second doorway in the south wall of the cabin appears only in the final, inked version of the 1914 plan (pl. 80); it does not exist in the original pencilled version. The southern doorway must therefore be understood as an afterthought of the excavators when they worked over the plan at home. In our view, the southern doorway should be eliminated. The gap which appears in the southern wall of the cabin and which may have inspired the reconstruction of the southern doorway (pl. 8a) is totally irregular in outline and was most probably caused by the removal of the westernmost stone slab during the destruction of the cabin.

The floor inside was covered by a brick pavement (pl. 9c). The builders had taken considerable trouble to insure a secure foundation for this pavement by crossing the underlying gypsum basin with three rows of bricks (pl. 79a–b). These bricks are exceptionally large—45 x 25 x 18 cm. The pavement itself is laid out in rows of bricks running east-west. Their size is 34 x 16 cm. Their original thickness is now much reduced because the pavement is considerably worn. The surface of the pavement and all walls inside it were plastered and whitewashed (pl. 8b). Further features of the building can be deduced from the Expedition photographs and plans. Plate 8a, for instance, shows that south of the doorway a row of large bricks running east-west across the pavement. This row of bricks can only be explained as the lowest course of a screen-wall shielding the rest of the room from the entrance. Along the south wall of the cabin a benchlike structure was found (pls. 8a, 10a). Close to the east wall this bench consisted of bricks, while further west a limestone slab was placed upright against the wall; it may be supposed that a second slab adjoined it on the west. The gap in the wall mentioned above (pl. 8a) could have been made when this stone slab was removed.

The most important feature of the room is the round channel broken through the east wall just north of the "hidden chamber" (pl. 10d). Its rounded shape and mud coating show that a drain pipe once ran through the wall. The marks, still visible, impressed into the plaster coating of the channel give further evidence for the presence of the pipe. At the western end of the channel, a sharp, crescent-shaped impression was left by the end of the pipe. Corresponding marks are found on the eastern end.

Old and Middle Kingdom drain pipes are either copper<sup>88</sup> or fired clay.<sup>89</sup> That the drain of the cabin was terracotta is proved by two sherds found in the debris which filled the channel. These two sherds (fig. 74, nos. 84/135 and 136) are of marl clay fabric C<sup>90</sup> with a thick black core and light yellowish surface. The object to which the sherds belonged was evidently handmade, for they show mainly impressions of fingers and irregular smoothing marks. The rim of no. 84/135 was folded

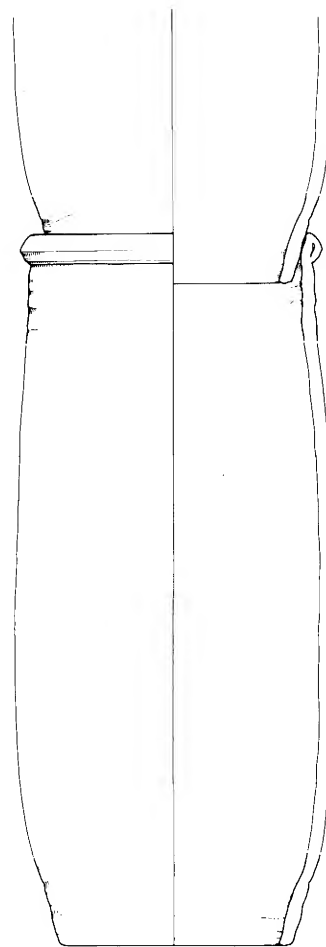


Fig. 6. Reconstruction of a drain pipe from the priests' bath. Scale 1:8. See fig. 4.

over; some uneven turning marks inside this rim might indicate that the uppermost part of this "vessel" was finished with a rotary motion. The angle of the sherds as given in the drawing (fig. 74) was carefully measured; it indicates almost vertical walls for the "vessel" in question. Since no vessel of this shape is known in the repertoire of the Middle Kingdom, reconstruction as a pipe seems to be the only possible solution. That such a pipe should have two openings of different shape is logical, for in this way a long pipeline could be formed by fitting the narrow end of one piece into the wide end of another (fig. 6).<sup>91</sup> Verification of the reconstruction of a pipe inside the round channel in the east wall of the cabin is furnished by a photograph taken during the 1914 excavations (pl. 8b). Here the round end of the drain channel is seen to contain a light-colored lining: I suggest the remains of the terracotta drain pipe.

The reconstruction of the length of the pipe from the two rim sherds as proposed in figure 6 is, of course, hypothetical. It was obtained by joining what sherds remain of the walls of the pipe in the way which seemed to produce the most even contour possible. To span the 1.30 m. of channel in the wall at least two pipes of the length thus reconstructed would be required. If some length of pipe was in addition required to protrude from the wall on both sides, at least three pieces of pipe would have been necessary.

<sup>88</sup> Borchardt, *Sahure* 78–83, figs. 106–113.

<sup>89</sup> Borchardt, *Neuserre* 120, fig. 100 and Blatt 22; Sh. Farid, *ASAE* 58 (1964) 95 with fig. 4 on page 91 and pl. 12.

<sup>90</sup> For the description of the ware, see page 127.

<sup>91</sup> Cf. Uvo Hölscher, *The Excavations of Medinet Habu V. Post-Ramesside Remains* (The University of Chicago Oriental Institute Publications 66; Chicago 1954) 42, fig. 48.



The drainage system just described provides an important clue to the original function of the cabin. The name "Porter's Lodge" given to it in the notes and photograph captions of the Expedition need concern us no longer. Use as an embalming house—a function which is regularly suggested for structures with a water supply near funerary temples—can be excluded here on the grounds of its small size and the fact that it contains only one room.<sup>92</sup> It can also be safely said that it was not a priests' house in the sense that cult personnel lived there. There is no room for beds, and the plans of the actual priests' houses near funerary temples that have been found are much more like ordinary houses than is the cabin.<sup>93</sup>

The closest parallels for the installations in the cabin are found in the bathrooms of persons of high status in Amarna.<sup>94</sup> In these bathrooms not only the drain but also two other features of the cabin appear: the screen wall that shields the inner room from the entrance, and the casing with upright slabs of limestone. The drainage provided for the Amarna bathrooms is often a second basin at a level lower than the one used for washing. Waste water would run into the second basin to be emptied later by a servant. There are, however, also instances of drain pipes like the one at Lisht.

Middle Kingdom examples of bathrooms in high-status houses are—as far as the evidence goes—less elaborately equipped, although Petrie describes a rather extensive drain system in the streets of Kahun, and seems to indicate at several places in his plans of the houses gaps in the walls of rooms which could qualify as bathrooms by their location close to the master bedroom.<sup>95</sup> It is possible that the gaps indicated were actually drain channels.

If the cabin indeed served as a bathroom, it clearly must have been a place for the purification of cult personnel. Literary and pictorial evidence for the importance of cleanliness in ritual functions is, of course, abundant.<sup>96</sup> Extant installations are nonetheless predominantly symbolic in nature. At the entrances of Old Kingdom funerary temples, chapels, and tombs, for instance, simple basins are found which usually lack any inlet or outlet for water, and are in themselves not large enough to hold more than nominal amounts of liquid.<sup>97</sup> The same is true of the few examples of purification basins found in New Kingdom temples.<sup>98</sup> In comparison with such baths for priests of a more or less purely ritual character, the Lisht cabin bath has a decidedly practical appearance. In this bathhouse, the priests could really clean and wash themselves before they entered the pyramid precinct. It is also conceivable that robes were kept here and that the cult personnel dressed themselves in the cabin.

One point should be noted: any connection of this bathhouse with the cult in the royal funerary temple is ruled out by the location of the cabin. No door has yet been found leading from the central (royal) stone causeway into the northern lane bordered by the northern brick causeway wall; neither is there a thoroughfare leading from the northern outer court into the royal temple. The cabin can therefore only have served the personnel employed in the various ritual activities underway for the secondary pyramids and burials in the outer court of the precinct. The appropriate place for the purification of the royal cult personnel would have been at the valley temple.<sup>99</sup> The connection of the bathhouse with the cult of the secondary pyramids and burials in the outer court has consequences for the dating of the structure. If, for instance, the cabin served the priests of pyramid 8 or 9, which are surely later than the main structure of Senwosret I (although how much later remains to be determined), a later date may also be indicated for the erec-

tion of the cabin in the northeast corner of the northern causeway lane. Theoretically, there would be no necessity to date either of the two pyramids 8 and 9 and consequently the cabin in the reign of Senwosret I at all. The study of the pottery found in the area of the cabin nonetheless allows us to state with certainty that the cabin was erected during the early part of the Twelfth Dynasty (page 143). Some clues to its later history are gained from the evidence of the pottery found east of the causeway widening as well as from the objects found in the courtlike area between the cabin and the pyramid enclosure (pages 33–40).

#### 9. THE AREA BETWEEN THE CABIN AND THE ENCLOSURE WALL

Various indications allow a reasonably secure reconstruction of the courtlike area to the west of the cabin lying between it and the brick enclosure wall of the pyramid complex.

On pl. 74 it can be seen that this area, which originally sloped to the east from about 3 m. east of the enclosure, was brought to the height of the "bed rock" by a fill of limestone chip and a layer of large limestone slabs. This fill is, of course, the westward continuation of stratum 9 in section A-B (pl. 78a), but it differs from that stratum in the size of the limestone used. Indeed, the limestone slabs west of the cabin have the appearance of a veritable subfoundation.<sup>100</sup> It is impossible to say whether the existence of this subfoundation in the place where later the cabin was built indicates that the original plan called for a stone structure to be erected here. At a later time, when the workmen's activities were underway and the cabin was built, the subfoundation formed a good base for the court that was prepared west of the cabin. Perhaps it performed the same function for the cabin itself, but it is not known whether the large stone slabs continue below it.

<sup>92</sup> Selim Hassan, *Excavations at Giza IV* (Cairo, 1943) 87–94. References to actual embalming places are cited in D. Arnold *LÄ I*, 614–615 s.v. "Balsamierungshalle."

<sup>93</sup> D. Arnold and R. Stadelmann, *MDAIK* 33 (1977), 17, fig. 2.

<sup>94</sup> Ludwig Borchardt and Herbert Rieke, *Die Wohnhäuser in Tell el-Amarna* (Ausgrabungen der Deutschen Orientgesellschaft in Tell el-Amarna V; Berlin, 1980) 51, fig. 7; 54 with channel for sewage water; see Plan 15 at "2–3"; 93, fig. 9; 107, fig. 10; 120, fig. 11; 194, fig. 28; 219, fig. 31; 264, fig. 39; pls. 6B, 19B, 21.

<sup>95</sup> Petrie, *Illahun* 8 pl. 14. Gaps in walls are indicated, for instance, in the large houses of the second row from the north, center, south walls. Identification of master bedrooms and bathrooms by Herbert Rieke, *Der Grundriss des Amarna-Wohnhauses* (WVDOG; Leipzig, 1932) 26. More information about the drainage system of Kahun can be found in Petrie's unpublished notes in the University College, London. We thank Professor Harry Smith and his colleagues for permitting us to consult these notes. Bathrooms with equipment are not drawn in the notes. Some of the Kahun houses, on the other hand, instead had ablation tanks in the center of rooms: Petrie, *Kahun* 24; Petrie, *Illahun* 7, pl. 16.3.

<sup>96</sup> See Siegfried Schott, *Die Reinigung Pharaos in einem memphitischen Tempel* in *NAWG* (1957) 3, Brigitte Altenmüller-Kesting, *Reinigungsriten im ägyptischen Kult* (Dissertation, Hamburg, 1968). The most realistic representation is that in the sanctuary of Hatshepsut at Karnak: Pierre Lacau and Henri Chevrier, *Une chapelle d'Hatshepsout à Karnak* (Cairo, 1977) 317–318, fig. 25; 330–332, pl. 18, no. 21; pl. 19, no. 140.

<sup>97</sup> Hölscher, *Chephren* 39–40 with fig. 23; Borchardt, *Re-Heiligtum* 49–50 fig. 42 and Blatt 6 (note that here the outlet originally provided has been carefully closed; it was evidently not deemed necessary). Borchardt, *Neferirkere* 17 with fig. 9 and Blatt 10 is of a somewhat different character; because rainwater was collected in this basin, any use for ablations would have been secondary (Rieke, *Bemerkungen AR II*, 81 understood it to symbolize the "Binsengefilde"). Other basins with drains near entrances or inside courts are closer to the group of water receptacles in the vicinity of sanctuaries called "sacred lakes": Selim Hassan, *Excavations of Giza IV* (Cairo, 1943) 86, fig. 42.

<sup>98</sup> G. Legrain, *ASAE* 4 (1903) 225, fig. 10.

<sup>99</sup> Cf. Petrie, *Kahun* 23, pl. 15. The situation looks somewhat different in Petrie, *Lahun II* pl. 33.

<sup>100</sup> Cf. the subfoundations in the temple and pyramid area, here pl. 28c–d.

The area west of the cabin was eventually covered with a "pavement" consisting partly of bricks (47 x 23 x 13.5 cm.; i.e., the largest size available), but mostly of limestone chips and hard packed mud.<sup>101</sup> The pavement still existed when the model coffins of Bener and Wahnoferhotep were buried beneath it (pl. 11a, d and page 34).

West of the west wall of the cabin there seems to have existed a kind of bench that covered the western end of the rows of large bricks that supported the cabin floor (pl. 8b). To the south, a low retaining wall bordered the court. This wall (pls. 8a, 8o) ran westward from the southwestern outer corner of the cabin and probably stopped halfway to the enclosure wall. To the south of this wall the floor must have sloped downward to meet the level of the northern lane (page 25).

#### 10. THE AREA IMMEDIATELY NORTH OF THE CAUSEWAY WIDENING

At the northeastern outer corner a wavy wall abuts the causeway widening (pls. 74, 76). The Expedition excavated four curves of this wall which runs eastward from the corner parallel to the causeway (pls. 8a, 8o). Gautier's expedition had cleared a continuation of the same wavy wall further east. The sixteen curves that appear on his plan<sup>102</sup> give the wall a length almost equal to that of the south enclosure wall of the mastaba of Imhotep. Gautier's plan also indicates that a second wavy wall, which runs southward from the south enclosure wall of Imhotep had originally joined the east-west wavy wall. When it is completely excavated, this system of wavy walls may provide a connection between the royal causeway and the mastaba complex of Imhotep.<sup>103</sup>

Unfortunately, the intersection of the east-west wavy wall and the royal brick causeway wall was not preserved when the site was re-cleaned in 1984 (pl. 74). It was nonetheless possible to establish the relationship between the two walls stratigraphically. Section I-K (pl. 79c) shows the strata that abut the brick causeway wall from the north:

1. The north face of the north wall enclosing the causeway widening. One can see how deep the foundations had to be in order to bring the corner of the wall up to the level of the ground farther west.<sup>104</sup> It should be noted that the wall foundation is broadest at the foot; the successive courses diminish in width as they rise.
2. Plaster and whitewash still adhering to the outside face of the two uppermost courses of bricks. These must accordingly be the two lowest courses of the wall above the ground. The floor on top of stratum 6 is therefore the original ground floor.
3. Most bricks at the western end of the east-west wavy wall, which originally abutted the northeastern corner of the causeway wall, have disappeared. The westernmost brick preserved (3) lies about 0.50 m. east of the corner. Nevertheless, it is clear from the section that the wavy wall was embedded in stratum 4, i.e., the fill above the floor that meets the causeway wall. It can therefore be stated with certainty that the wavy wall is later than the causeway wall.
4. Stratum 4 consists of gray sand and mud, material which could well have accumulated while the floor on top of stratum 6 was in use. This floor clearly formed a kind of shallow basin beside the wall, a feature found repeatedly along walls against which loose fill has been thrown.<sup>105</sup>
5. Stratum 5 lies on top of the floor of 6 in a place where no accumulation of sand and mud is found. The stratum con-

sists almost entirely of sherds; it is the southernmost end of the pottery "dump" noted by the Expedition<sup>106</sup> as lying north of the area of the northern gate. Unfortunately, the stratum was removed in the immediate neighborhood of the wall, and therefore no statement can be made about the chronological relationship of the pottery to the wavy wall, except that the pottery dump is, of course, later than the causeway wall.

6. Stratum 6 consists of compacted mud with a hard surface; its "floor" has been repeatedly referred to.
7. Fill thrown against the causeway wall consisting mainly of broken brick and limestone chips with larger limestone pieces mixed in. This fill is clearly later than the causeway wall, but since it lies below the floor, it must belong to the building activities connected with the erection of the brick causeway.
8. This layer consists of fine limestone chips with some admixture of pieces of limestone with worn edges and an occasional accumulation of mud. The layer looks like typical construction debris.
9. The layer is similar in consistency to stratum 8, but divided from it by a clear floor of compacted material.
10. The lowest stratum uncovered in 1984. It consists of very large, irregular limestone blocks, some brick material, and numerous medium-sized limestone pieces. Strata 9 and 10 are not divided by a floor, but are distinguished by the texture of the material.

Section I-K—in addition to clarifying the relationship of the wavy wall to the brick causeway wall—reveals some interesting clues about conditions in the area before the erection of the brick causeway wall. Strata 9 and 10 with large limestone blocks and chips must have existed before the causeway wall was built, for otherwise the abrupt and in part almost vertical end of the strata at the southern side could not be explained (pl. 79c, below and between nos. 3 and 4). When the causeway wall was finished, part of the material of stratum 10 was pushed against its lowest courses, while higher up the "foundation trench" was filled with limestone chip and broken brick (stratum 7). Stratum 8 seems to have been deposited in connection with this fill. When the wall was finally plastered and whitewashed, stratum 6 was spread to form a floor north of the wall.

This is not the place to speculate about the origin of the large masses of building debris, especially in the form of large pieces of limestone. The erection of the stone enclosure wall of the pyramid might, however, be the obvious candidate.<sup>107</sup> It is entirely possible that the large limestone slabs seen to the west of the cabin are remains of the same building debris (pl. 9c).

<sup>101</sup> Cf. the description of the finding of the model coffin of Wahnoferhotep, page 37.

<sup>102</sup> *Licht* pl. 3.

<sup>103</sup> See the forthcoming publication of the Lisht South Cemetery.

<sup>104</sup> Cf. section A-B, pl. 78a.

<sup>105</sup> Cf. pl. 78a, at (8).

<sup>106</sup> Lythgoe noted in his diary on March 24, 1914: "Just east of the outer brick enclosure wall of the pyramid, in [the] corner of that wall and the causeway are ancient dump heaps consisting of masses of broken pottery and small model pottery vases such as we have been finding in all this area near the enclosure wall. The large surface heaps of such pottery which we cleared away on top of the enclosure wall perhaps 50 ft. north of the causeway, must have been made by the French in throwing up the pottery in their sondages into the ancient dump heaps." Lansing (?) noted on tomb card 1457, which lists the contents of shaft 5108: "A large heap of this shekf [i.e., sherds] was situated over the pit and pots may have been thrown in by plunderers." For the position of shaft 5108, see pl. 8o.

<sup>107</sup> Other possible sources are the stone causeway walls.

## II. THE AREA IMMEDIATELY EAST OF THE CAUSEWAY WIDENING

When the builders of the cabin pushed the drainpipe through the wall to the east of it they must have known that they would somehow need to provide an outside receptacle for waste water. Without such a receptacle, the water would have run down the north-south slope to accumulate against the north face of the brick causeway wall. The recleaning of 1984 revealed more about the precautions taken to prevent such a situation. Plate 78b shows section C-D, which runs from the causeway wall eastward, at the height of the "hidden chamber" (pl. 74).

The left side of the section is dominated by the east wall enclosing the causeway widening. The "hidden chamber" and the drain channel beyond it are visible (pl. 78b, nos. 3, 2). East of the wall a hard mud stratum (11) slopes toward the east. This stratum is so hard that it can only be removed by pickaxes. It clearly represents a final "landscaping" effort by the builders after construction activities had come to an end in the area. In the excavation of 1984, the floor on top of this stratum was uncovered from the outer northeast corner of the causeway widening down to the north face of the easternmost portion of the brick causeway wall (pl. 76). The floor surface dips considerably from north to south as well as from west to east. The west to east slope is visible in section C-D (pl. 78b).

Section C-D also shows a carefully cut, rectangular hole in the hard stratum just east of the east wall of the causeway widening. At one point a large brick is seen protruding from the east side of the hole. This brick is not sufficient evidence for reconstructing a brick lining for the rectangular hole. It was probably hit accidentally when the hole was dug and left in position as a step.

The purpose of the hole must have been either to serve as a receptacle for the waste water from the drain, or to hold a vessel into which the water could run. Such a vessel could have been removed when full and the contents poured out. There seems to be evidence, however, that water simply ran into the rectangular hole: on the east face of the wall of the causeway widening, just above the hole and extending inside it, is a mud accretion (pl. 78b, no. 5). This accretion differs distinctly from the plaster found at places where the walls were whitewashed. It is much coarser, lacks the chaff admixture of the plaster, and has no smoothed surface. The accretion is best explained as residue of the waste water which ran from the drain into the rectangular hole and may sometimes have filled it, remaining there until it evaporated.

When it was found, the rectangular hole was completely filled with debris, mainly potsherds mixed with windblown sand (pl. 78b, no. 8). The same debris formed a hill over the hole. It thus becomes clear that the careful preparations, first to create a very hard mud floor east of the causeway widening, then to make the rectangular hole to receive the waste water, did not prevent the area from eventually being used as a dumping ground.

The history of the dumping can again be deduced from section C-D (pl. 78b). There are five different accumulations of dump material, shown as numbers 6-10 in the section drawing. Number 6 is certainly, number 7 probably, of fairly recent date. Number 6 consists of broken bricks. These are remains from the destruction of the wall enclosing the causeway widening on the east, a destruction which took place after the excavation of 1914 and before 1924, at which date a photograph (6LN 33)

was taken that shows the brick walls of the northeast causeway area in approximately the same condition found in 1984.

The sherd accumulation 7 in section C-D most probably derived from the two mounds to the right and left of it (nos. 8 and 9), which meet at such a steep angle that the uppermost sherds must have slid down, filling the V-shaped depression between them. This can well have happened during or after the excavations of 1914.

All other dump material seen in section C-D must be of ancient date, as is shown by the homogeneous nature of the sherds and other refuse, and by the tightly packed consistency of the layers. The only question is that of the chronological relation of accumulation 8, which fills the rectangular hole and forms a heap above it, and accumulation 10, which lies further east and lower down on the slope. As drawn, accumulation 10 seems to lie under the easternmost end of heap 8, but this can be observed in only a very small area.

Layers 9 and 10 of the dump were removed during the 1984-85 excavation in seven stages (here called first to seventh "sweeps"). Sweep 1 was a collection of surface sherds. From the second sweep onwards, each sweep consisted of the removal of 20 cm. of dump material. It was later determined that the second and third sweep comprised material from accumulation 9, while the fifth, sixth and seventh belonged to what was later called accumulation 10. The fourth sweep yielded mixed contents and was therefore not considered further.

As excavation proceeded downwards in accumulation 10, there was a noticeable increase of gray ash, while in the area of the seventh and final sweep, the ash predominated.

The study of the pottery from these sweeps revealed (see page 143) that there was a distinctive difference in the date of the sherds from the second and third on the one hand and the sherds from the fifth on the other, while the sherds from the final, seventh sweep were again different in date. There is no discernible chronological difference between the pottery from the second and third sweeps (accumulation 9) and that from the rectangular hole and above it (accumulation 8). But the difference between the pottery from sweep 7 and possibly also sweep 5 (both, accumulation 10 in section C-D) on the one hand and the sherds from accumulation 8 on the other is quite clear.

It can therefore be stated that the dumping in the area east of the causeway widening started with the deposition of accumulation 10, which contains the oldest sherds. The large percentage of ash in the lower part of accumulation 10 leads to the assumption that this refuse originated in a kitchen. The fact that this earliest refuse was not dumped directly beside the wall, but about 1.5 m. east of the rectangular hole, indicates that at that time the drainage system from the cabin was still functioning, and that the refuse was most probably dumped from the east or southeast, not from the direction of the cabin and causeway widening.

When accumulation 10 had grown to more than half a meter in height, another dump was started, and the rectangular hole was filled with refuse rich in sherds. It follows that at this time the drainage system from the cabin had either fallen into disuse or, at least, the users of the drain no longer cared whether their waste water ran into a proper receptacle or into a heap of sherds (which may in fact have provided not a bad material for the absorption of the water).

The dumping continued when the hole was full and went on until a considerable heap had accumulated on top of it. More

dumping was subsequently carried out from the east, as shown by the fact that accumulation 9 in section C-D clearly runs against accumulation 8. To judge from the date of the pottery, however, there seems to have been only a short time between the dumping of accumulations 8 and 9.

More will be said about the absolute chronology of the dumps in the chapter on pottery (page 143). Suffice it to state here that the entire dump east of the cabin as found in 1984 contained no pottery later than the middle of the Twelfth Dynasty. If the filling of the waste water receptacle with refuse can be considered adequate evidence that the drainage system fell into disuse, the mid Twelfth Dynasty date of the pottery would mean that the cabin in its original elaborate arrangement may not have been used as a bathhouse much longer than one or two generations. How the structure was used later, whether as a house for robing and purification without drainage, or in another way, is no longer possible to determine. The large numbers of model pots which the Expedition found in 1914 inside the cabin (see pl. 10a) might originate from this later use. These model vessels will be dealt with in the second volume of this publication because the Expedition did not specify which types of their "corpus of model pots" were found in the cabin, but instead established one "corpus" for all models found in the Lisht South pyramid precinct. Two points should be mentioned here however. The date of many of the model vessels of the "corpus" is decidedly later than the middle of the Twelfth Dynasty. These model pots, therefore, have no connection with the dumps of sherds east of the cabin, where indeed the excavations of 1984 did not reveal model pots as described in the "corpus."

The second point worth mentioning about the model pots concerns their functional aspect. There are two possible explanations for the presence of later Twelfth Dynasty model vessels inside the cabin. Either this structure was later used for some ritual purpose, or the Expedition removed a late Twelfth Dynasty dump from above the cabin. One can only speculate which of these explanations is the right one until more research is done on the various dumps south and southwest of the mastaba enclosure of Imhotep.

## 12. FINDS FROM THE AREA OF THE NORTHWESTERN CORNER OF THE CAUSEWAY

It was stated at the beginning of the description of the area of the northwestern corner of the causeway that in the preliminary reports—and, unfortunately, in the tomb cards as well—the finds made in this area are insufficiently differentiated. The indication of a provenance "from the northern gate" was automatically understood to mean "from the dump—or mound of debris—outside the northern gate." And the designation "the dump" comprised not only the pottery dumps to the east and northeast of the cabin, but also the spot south of the mastaba enclosure of Imhotep near shaft 5119, where the seal impressions were found, as well as—in the case of the wooden statuette of Mentuhotep—the whole area around the shafts south of the Imhotep enclosure.

After recognizing that the area east and northeast of the northern gate is divided into several distinctive loci, the dumps being divided from the cabin and the courtlike area to the west of the cabin by a thick wall, it is quite clear that in order truly to understand the context of each find it is necessary to pinpoint the findspot. At the least it is necessary to make clear whether one is dealing with an object from inside or outside the bound-

dary of the causeway widening. Since the tomb cards in many cases only note "northern gate" as the findspot, it is necessary to bring in evidence provided by the photographs and the diary of 1914 to assign many of the finds to their proper original provenance.

The clearest case can be made for the seal impressions, perhaps the most important finds made in the area. Here the photographs of the various stages of the excavation with the dates given in their captions<sup>108</sup> and the corresponding entries in the diary establish the following chronology:

*March 18, 1914:* Diary entry: "Found painted ushebti box" [Wahnoferhotep; see page 37].

*March 19 and following days:* Brick walls of cabin are cleared: photos L 13-14, 1014-18, 1098, 1111-1114, 1117, 1118.

*March 24:* Photo of section through pottery dump east of cabin and east wall is taken (here pl. 10b). On the same day, the large beam is found (photos L 13-14, 1021, 1022) and the diary notes the find of "ancient dump heaps consisting of masses of broken pottery and small model pottery vases."

*March 26:* Photos (L 13-14, 1023, 1025, 1126, 1127, etc.) show that fewer workmen are working in the area of the cabin.

*March 31:* Photos (L 13-14, 1133, 1135) show that no more workmen are occupied in the area of the cabin; the work there is finished.

Thus, when the diary of April 5, 1914 notes for the first time, "Are finding many fine mud sealings with scarab and cylinder impressions," there was no longer work in progress in the area of the northern gate. The excavation had moved completely to the south of the mastaba of Imhotep. It was in fact around shafts 5118 and 5119 that the workmen were occupied on this day, and a photograph labeled "Clay sealings level in redim south of Imhotep enclosure" (L 13-14, 1034) is dated April 7. Another photograph (L 13-14, 1148) conclusively identifies the wall which appears in the previous photograph of the sealings-locus (1034) as the enclosure of shaft 5119.<sup>109</sup> When later, in 1931, Hayes, working with Lansing, re-opened the spot where the sealings had been found in 1914, this work again was clearly undertaken south of the Imhotep mastaba. Accordingly, all the finds noted on tomb cards and in reports<sup>110</sup> as "found with the clay sealings," must be attributed to the area south of the mastaba, not to the northern gate and

<sup>108</sup> The captions and dates below the original prints of the Lisht expedition photos must have been written by the excavators themselves. No other explanation for the precise dates can be suggested.

<sup>109</sup> This subject will be discussed in detail in the forthcoming publication of the Lisht South Cemetery.

<sup>110</sup> The objects that have been formerly identified in some way or other with the Northern Gate are described in three different ways. The most precise description is: "Objects found with the clay sealings" (Tomb cards 1261-1263 and 1267-1271). These objects certainly come from the area south of the mastaba of Imhotep. The second description is: "North Temple Gateway—Old Material" (Tomb cards 1264-1266; mainly amulets, etc.) It seems clear that these objects were registered not at the time of discovery, but later, as "Old Material," most probably in 1924-25 (see A. Lansing, *BMMA* 21, March 1926, II, 33) when the Expedition set out to order the storerooms. The wording as well as the nature of the objects suggests that these finds too should be attributed to the clay seal impression group. The wording is also very similar to the following, third version with which some of the model pottery is described. Tomb card 1272 says, "cf. Note on clay sealings: Near the North court entrance was found a great quantity of pottery mostly of the model type." Again, clay sealings and "North court entrance" are used to designate one and the same place. Tomb card 1273, on the other hand, only speaks of "Model pottery from rubbish of temple. Mostly outside enclosure near side entrance N of main entrance." A similar description also appears on photos 7LN 23-24.

the cabin. These objects have nothing to do with the priests' bath described in this section.

The finds actually made in the area of the cabin are interesting enough. They consist of the various groups of pottery dealt with in chapter XII, the remains of implements found below the pavement of the cabin (page 28, pl. 12d, f) and, finally, a number of boxes and two model coffins with *shabtis* inside. These last objects were found in the area between the cabin and the enclosure wall, west and south of the cabin (pl. 80). They are important examples of "extrasepulchral *shabtis*," a category of objects that in most instances lack full documentation of context.<sup>111</sup> This makes the photographic and descriptive records published here all the more valuable.

#### LIST OF FINDS FROM THE AREA BETWEEN THE CABIN AND THE ENCLOSURE WALL

##### 1. Model coffin of the hall-keeper of the palace Bener,<sup>112</sup> MMA 11.151.763

Sources: Tomb cards 1255-1257.

PHOTOS: L 8-9, 360 (here pl. 11a), 365.

New drawing fig. 7.

BIBLIOGRAPHY: Hayes, *Scepter* I, 350.

Found June 18, 1909 inside the northwestern corner of the northern brick causeway lane. Tomb card 1255 describes the circumstances in the following way: "Against east side of outer

(mud brick) enclosure wall of pyramid, about 3 m. north of the gateway through the enclosure wall north of temple causeway." . . . "Cover of box out of position somewhat, and the box filled with dirt, the ushabti in upper part of box and lifted from the bottom by the dirt." On the basis of this text, the position of the coffin was entered on pl. 80 by the present authors. Photograph L 8-9, 360 (pl. 11a) shows that the model coffin with the small pot beside it was clearly carefully buried under the pavement and floor that covered the area (compare the description of this "pavement" quoted below under no. 4). If the group had been indeed "thrown out from some neighboring tomb," as Lythgoe remarked on the tomb card, the pot would not have rested as neatly as it does in the photograph, against the side of the box (for the pot see below no. 3). The box cover, moreover, had been tied on by two strips of cloth, one at either end, each about 2.5 cm. wide; these strips were still in position when the find was made. The fact that dirt penetrated into the box may well be due to the later shifting of earth above the coffin.

Rather soft wood with clear parallel veining.<sup>113</sup> Two knotholes in the upper side of the lid.

BOX: H. 11.75 cm.; L. at top 27.5 cm.; at bottom 28 cm. W. 14-14.2 cm.; bottom of foot board, only 13.5 cm.; Th. of side boards 2.2 cm.; Th. of head board 1.6 cm.; Th. of foot board 1.9-2.0 cm.

FLOOR BATTENS: L. 13.7 cm.; Th. 2 cm., at head: 1.8 cm.; H. 1.3 cm.

LID: H. 3.2 cm.; L. 27 cm.; W. 11.5 cm. Lid battens: H. 4 cm.; L. 14 cm.; Th. head batten 2.7-2.9 cm.; foot batten 2-2.5 cm.

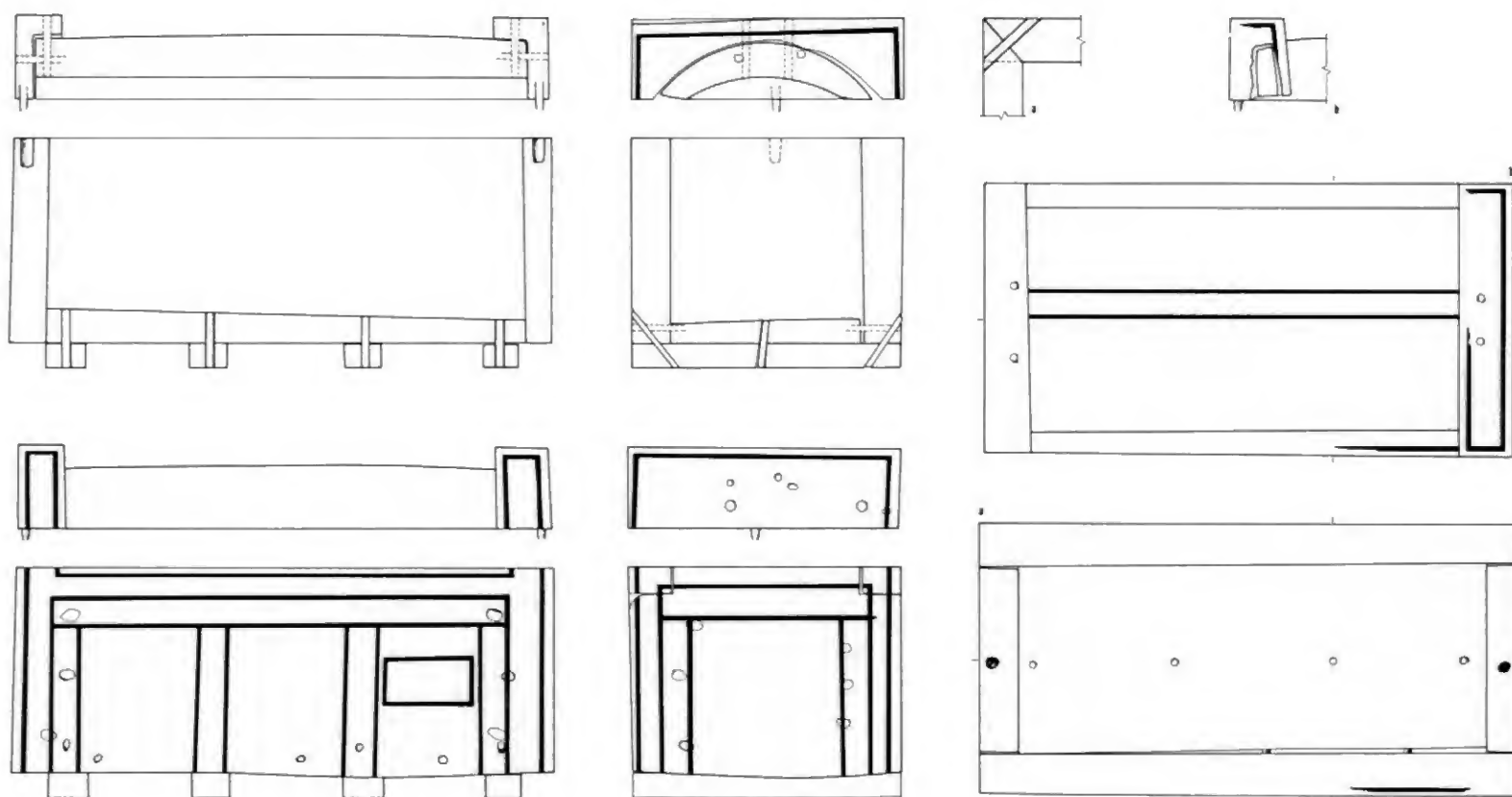


Fig. 7a. Coffin of Bener. See pl. 11a.

<sup>111</sup> Schneider, *Shabtis* 268-283. I. E. S. Edwards in *Egyptological Studies in Honor of Richard A. Parker*, ed. Leonard H. Lesko (Hanover and London, 1986) 27-36. D. Spanel, *SAK* 13 (1986) 249-253.

<sup>112</sup> William A. Ward, *Index of Egyptian Administrative and Religious Titles of the Middle Kingdom* (Beirut, 1982) 57 no. 459.

<sup>113</sup> Scientific determination of the wood will follow at a later point.



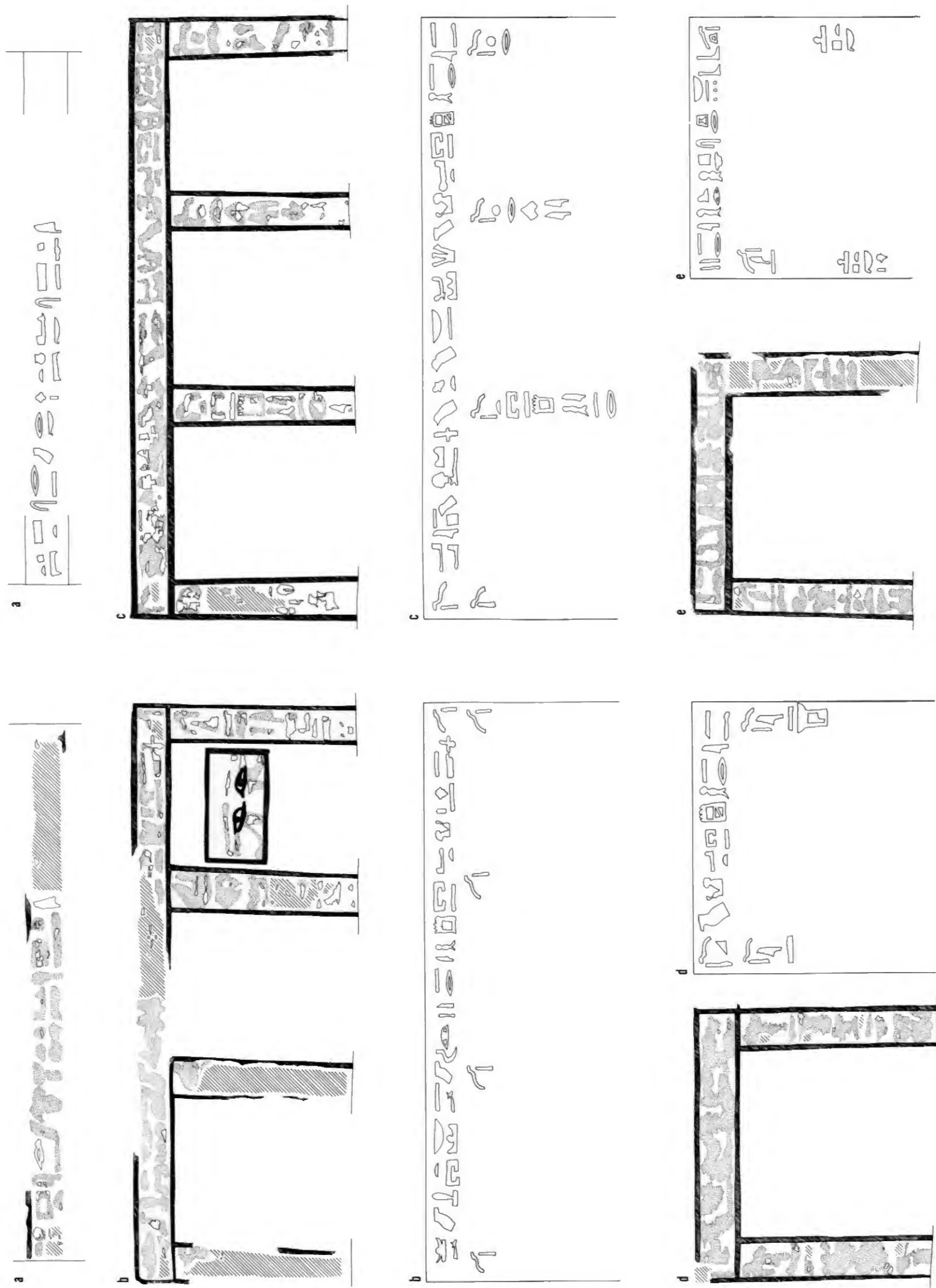


Fig. 7b. The inscriptions of the Coffin of Bener.

Model of a rectangular coffin with vaulted lid, to the head and foot of which rectangular battens are attached. Each side of the box consists of a separate board. The boards are joined by wooden pegs. The corners of the boards are mitred, with also tenon and mortise at the top. The pegs are driven in horizontally, except for those by which the floor battens are attached, which have been driven in diagonally. The boards do not taper as they do in full-size coffins from the site. There are four floor battens, two at each end of the floor board, and two between them (space between battens: 5.2; 5.8; 5.2 cm.).

The lid consists of a central piece which is carved in the shape of a vault, the underside being less curved than the top. Rough carving marks are visible, especially on the underside, where the wood has also splintered. The rectangular lid battens have been cut out on the bottom inner side to fit onto the vault of the lid. They are joined to the lid by vertical and horizontal pegs. Two additional pegs in the center of each smaller side were used to attach the lid to the box. The back side of the head batten has been patched; the filling material is now missing (see fig. 7a).

The underside of the lid is thickly coated with pinkish white gypsum (Munsell 7.5 YR 8/2). The same coating has been used to cover the knotholes in the lid and the corners of the coffin where the boards do not fit well. Some places on the outside of the box have been patched with gypsum.

Coffin and lid are decorated with painted bands of inscriptions and an eye panel. The decoration seems to have been applied in the following order: first the bands and panel were framed in black color; then the framed areas were filled with yellow gesso (Munsell 10 YR 8/6), undoubtedly in order to imitate gold bands (see model coffin no. 4 below); finally, the hieroglyphs were painted onto the gesso in what originally must have been blue color which has changed and is now green (Munsell 5 G 7/4. For the determination of the pigment on the parallel coffin of Wahnoferhotep see page 37). The eyebrows and various additional lines of the *udjat* eyes are also indicated in blue, while the center of the eyes is outlined in black.

The preservation of the inscription is very poor. In most places, the hieroglyphs can only be traced from the blank areas where the pigment has fallen away and taken the underlying gesso with it. The reconstruction of most of the inscription was nevertheless possible on the basis of the parallel texts. See the appendix by Peter Dorman, page 147 and fig. 7b.

The model coffin contained the alabaster *shabti*, no. 2 below. It should be remarked that this model coffin not only has the same general shape and decoration as a full-size coffin of the same period, but it was also constructed in the same way. It is clear that the maker saw it as a proper coffin in every respect but size.

For the date, see page 147 on the inscriptions, and below, no. 3.

## 2. Shabti of the hall-keeper of the palace Bener, MMA 44.4.5

Sources: Tomb cards 1255–1257.

PHOTOS: L 8–9, 363 (here pl. 13b), 364; neg. nos. 241 303, 241 303, 241 304 (here pl. 13c–e).

BIBLIOGRAPHY: Hayes, *Scepter* I, 350; Schneider, *Shabtis* I, 92, 183, fig. 6.

Inscription: Fig. 8.

Found in the model coffin no. 1 above. Wrapped in linen and lying on its left side, so that the face was behind the eye panel

drawn onto the coffin side. The head was towards the north; the face, looking east. The wrapping is described on tomb card 1256 as follows: “Was wrapped in an outer strip of soft cloth, about 60 cm. long and 12 cm. wide, not very carefully wrapped about and in no apparently regular manner. Outside the wrapping, at the end the bundled figure had two string-like tapes of the same cloth tied around at the neck and the middle. Underneath the outer wrapping was a similar second wrapping in the same kind of cloth with a piece about same size (60 cm. by 12 cm.). Underneath this the third and last wrapping was in a piece of thicker and heavier cloth—a piece 35 cm. long, fringed on one end, 15 cm. wide and with finished edges on both sides—evidently the end of a scarf or something similar.”

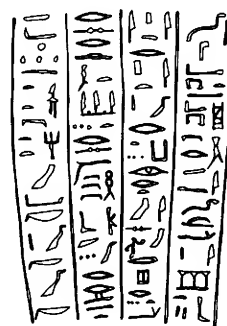


Fig. 8. *Shabti* of Bener.

Calcite (“alabaster”). The stone was selected and worked so that the veins seem to surround the body like wrappings; the feet and shoulders are in zones of almost white color.

L. 18.5 cm.; W. at shoulders 6 cm.

Mummiform *shabti* without indication of arms, but fine modeling of body and face. The ears are indicated by sharply defined ridges which continue downward into the lobes, while the insides of the ears are rounded but otherwise undifferentiated areas. The eyelids are finely shaped in relief and the eyebrows rendered as sunken, crescent-shaped grooves; both brows and the upper and lower lids are further marked by thick lines painted in black which partly obscures the fine modeling. The corners of the eyes are filled with red paint. Cheekbones, chin, and lips are clearly defined: even the furrow between nose and upper lip is marked. The nose is remarkably flat at the tip. The wig is set off by sharply incised lines, especially in front; its straight-ended back part is divided from the body by smooth grooves.

The four columns of hieroglyphic inscription on the front of the lower body are incised and filled with blue pigment (Munsell 5 B 7/6) which has now partly disappeared. The inscription contains the *shabti* spell in version III A of Schneider (fig. 8). For the date, see below, no. 3 and page 147.

## 3. Pot from Bener group MMA [12.180.9]

Sources: Mentioned on tomb card 1255.

PHOTOS: Neg. no. 12608 (here pl. 67e).

Found at the foot (south side) of the model coffin no. 1 in slightly tilted position (see pl. 11a); no lid.

Nile alluvium clay, fabric B.

H. 7.5 cm.; max. W. 4.8 cm.

Carinated beaker with flat base, rounded carination, and flat angular profile rim, which slants inwards and carries a slight groove on its upper side.

Thrown, string-cut base. Self-slipped on the upper part. Broken into three parts. No contents were noted, although the photograph (pl. 11a) seems to indicate some substance inside.

Parallels found at Lisht North (burial of Senebtisi),<sup>114</sup> Hawara,<sup>115</sup> Dahshur,<sup>116</sup> can be cited. All these parallels are either of the time of Amenemhat III or not long after. Accordingly, a date for the Bener pot in the late Twelfth or early Thirteenth Dynasty seems indicated.

#### 4. Model coffin of the royal adherent Wahnoferhotep,<sup>117</sup> MMA 14.3.69 A-B

Sources: Diary Lythgoe March 18, 1914. Tomb cards 1258–1260.  
BMMA 10, Feb. 1915, supp., 22; Lythgoe, *AE* 1914 IV, 153.  
PHOTOS: L 13–14, 1288 (here pl. 14b); archaeological context: L 13–14, 1010–1013 (here pl. 11c, d); neg. nos. 33164 (here pl. 14a), 33166, 137467.  
New drawing fig. 9.  
BIBLIOGRAPHY: Hayes, *Scepter* I, 193, 349–350, fig. 229; Georges Posener, *Dictionnaire de la civilisation Égyptienne* (Paris, 1959) 72 B; B. Brier, *Ancient Egyptian Magic* (New York, 1980) fig. 55.

Found, according to tomb card 1258, “north of the entrance from causeway 13.20 m. from nearest corner of granite doorsill and 3.10 m. east of base of brick enclosure wall. At this point of enclosure wall, extending east and slightly below the level of its base is a fairly level pavement made in part of bricks, 47 x 23 x 13.5 cm., laid on their sides, but for the greater part of limestone chip and mud packed hard. In this latter but with broken bricks around it was found the ushabti coffin, its top slightly below the level of the top of flooring. It was lying right side up head diverted slightly west of north. Leaning against its west side were three jars.” There can thus be no doubt that the model coffin was intentionally buried beneath the floor of the area west of the cabin, and the position has accordingly been entered on the plan (pl. 80) by the present authors.

Rather soft wood with close-set veins; some knotholes are visible, and the boards are less evenly cut than those of the Bener coffin (no. 1, above).

BOX: H. (including floor battens) 11 cm., in some places only 10.7 cm.; L. 24 cm. Th. of boards at long sides 1.5 cm., at short sides 1.0 cm. and 1.2 cm. at foot.

LID: H. 3.2 cm.; L. 24–24.5 cm.; H. of battens 4.7 cm. H. of backside of head batten 5 cm. Th. of lid battens 1.5 cm.

The overall shape is as in no. 1; the differences lie in the construction. Each side of the rectangular box is made of a separate board. The boards are mitred at the corners; there is no housing at the top. The floor board does not fit the sides very well; the open joints seem to have been smeared with gypsum mortar, some of which still adheres. A thick gypsum layer covers the underside of the floor board and the corners of the floor battens; this gypsum layer (Munsell 5 YR 7/4) is now pink, but the color may have been changed by conservation treatment. A thinner layer of gypsum covers the inside of the box; its color is very pale brown (Munsell 10YR 8/4). The outside is gessoed all over. Over the gesso coating gold foil was first applied to the rectangular eye-panel, the bands for the

inscriptions, and at each corner, as well as to the top corners of the long side boards. It seems that at these corners, the gold foil did not everywhere reach the ends of the boards, although restoration may again have caused slight changes (pl. 14b shows the state of preservation before the box was restored). Only after the gold foil had been applied did a painter draw black lines to frame the eye-panel and the bands of inscriptions. Finally, the rest of the outside of the coffin was painted red (Munsell 5R 4/8). Where the gold foil extended into the areas outside the black framing lines, it too was covered by red paint.

There is one horizontal band of inscriptions on each side, two vertical bands at each end of the horizontal ones on the head and foot boards, and four vertical bands on the long side boards.

Between the vertical bands are drawn three false doors on each long side; a single false door appears on the head and foot boards. The false door on the front side nearest to the head is smaller than the others, because the rectangular panel with the eyes is inserted above it. All the false doors are outlined in black; only the innermost vertical and horizontal compartments are filled with gray-blue color (Munsell 5B 6/2). The hieroglyphs on the gold foil are painted in a pigment which is now a gray-green color (Munsell 5GY 5/4) but was originally blue.<sup>118</sup> The varying thickness of the color permits us to see where the scribe dipped his brush. In some places the color of the inscriptions looks almost black. The eyes on the eye panel are framed in black, and the eyebrows and additional lines are of the same, now green, originally blue color as the inscriptions.

The lid is made from the section of a round pole; the two end battens were added after they had been cut to fit the vaulted shape of the lid. In the decoration the same procedure was followed as with the box. The corners of the battens were covered with gold foil, and a band of gold foil was fixed to the top of the vault. This band, as well as the corners of the lid

<sup>114</sup> Mace and Winlock, *Senebtisi* 110, fig. 82, no. 12 and pl. 34. The date of this burial is under discussion (B. Williams, *Serapis* 3 [1975–76] 41–55; Ch. Lilyquist, *Serapis* 5 [1979] 27–28). This is not the place to enter into this discussion (see the forthcoming publication on the Lisht North Cemetery by Janine Bourriau), but it may be appropriate to point out that the medium-sized marl clay fabric C pot from the burial (Mace and Winlock, *Senebtisi* 110, fig. 82, no. 22 and pl. 34 center) still has the shape of the late Twelfth to early Thirteenth Dynasty with the precisely accentuated rim with the ledge underneath. A dated parallel for this was found at Dahshur in late Twelfth to early Thirteenth Dynasty context (Do. Arnold, *MDAIK* 38 [1982] 63, fig. 19 no. 2). Further judgement must be withheld until new drawings of the Senebtisi pots are made.

<sup>115</sup> Petrie, *Labyrinth* pl. 34, no. 94. Tomb no. 57, from which this pot comes, contained in addition a shabti (Petrie, *Labyrinth* 35, pl. 30 top) which Schneider, *Shabtis* 179, dates to the Twelfth Dynasty. The piece is similar to the Bener shabti no. 2.

<sup>116</sup> De Morgan, *Dahchour* I, 108, fig. 251 lower row, right. The date of the burial of Nubhetepthikhered from which the pots come is determined by two factors: the inscriptions show the mutilated bird and serpent signs first known from the burial of Neferuptah, daughter of Amenemhat III (Nagib Farag and Zaky Iskander, *The Discovery of Neferuptah* (Cairo, 1971) 49–53, figs. 30–32 pls. 7, 8), and also found on the model coffins and shabtis published here (see page 147, appendix by Peter Dorman), and the burial must be later than that of king Hor (De Morgan, *Dahchour* I, 87–106), because the latter occupies the first in the same row of shafts (De Morgan, *Dahchour* I, 86, fig. 205). For the date of king Hor see Christian Hözl, forthcoming: early Thirteenth Dynasty.

<sup>117</sup> William A. Ward, *Index of Egyptian Administrative and Religious Titles of the Middle Kingdom* (Beirut, 1982) 145 no. 1245; Bettina Schmitz, *Untersuchungen zum Titel s3-njswt “Königssohn”* (Habelts Dissertationsdrucke Reihe Ägyptologie, Heft 2. Bonn, 1976) 235.

<sup>118</sup> The pigment was examined by James Frantz, Department of Objects Conservation, the Metropolitan Museum of Art, and found to be “Egyptian blue.” See Lucas, op. cit. (supra n. 75), 340–344.





Fig. 9. Coffin of Wahnoferhotep. See pl. 14b.

battens, was framed with black lines. The rest of the surface of the lid was then painted red. The hieroglyphs on the center band were probably painted with the same color as the rest of the inscriptions, but they have almost completely disappeared. The lid was joined to the box by two pegs, one each in the center of the head and foot boards.

For the texts, see fig. 9 and the appendix by Peter F. Dorman (page 147). For the date see below under no. 6.

When found, this model coffin contained the *shabti* (see no. 5 below) in its wrappings. The coffin differs from that of Bener found nearby (no. 1) in its simpler construction, which seems to suggest that the carpenters had learned in the meantime how to adapt the construction method to the small size.

According to Lythgoe's diary, the coffin was heavily paraffined at the site after its discovery. It was later re-assembled (see pl. 14b), and in the Museum the gold foil was in various places re-attached.

## 5. *Shabti* of the royal adherent Wahnoferhotep, MMA

14.3.70

Sources: Diary Lythgoe March 18, 1914.

PHOTOS: L 13-14, 1284-1287 (here, except 1285, pl. 15a-c); neg. nos. 33165, 137467, 201276 (here pl. 15e), 201277, 201278 (here pl. 15e), 201279 (here pl. 15d).

BIBLIOGRAPHY: See above, under no. 4 and Schneider, *Shabtis* I, 92, 183; III, pl. I, figs. 3, 6.

Found inside the model coffin no. 4, wrapped in linen which had much decayed (pl. 15a-c). The *shabti* was lying on its left side, head west of north, face looking east.

Wood covered by gold foil on gesso, painted; the headdress of painted gesso. H. 21.2 cm.; W. at shoulders 6 cm.

*Shabti* with the crossed arms rendered in relief. The attitude is no. 1 of Schneider, *Shabtis* III, fig. 12: the right arm over the left. The modeling of the body emphasizes the rounded belly and the buttocks in a naturalistic way, while a swelling at the back below the buttocks has no equivalent in natural human anatomy. The feet are modeled in the usual shape of the feet of a mummy, broadening towards the flat base. The hands are rather large and show clearly separated thumbs with thumb-nails. The head is large in proportion to the body and covered by a *nemes*-like headdress, which has a rounded upper part that covers the head and two side flaps in front that fall over the shoulders. These flaps are flat and clearly separated from the rounded head section by a groove at either side of the neck. The flaps in *nemes* fashion have straight sides towards the neck, but end in a round curve on the outside. At the back the head-dress ends not in the tail of a *nemes*, but in a horizontal fringe like a wig. This fringe is the only gilded part of the headdress.<sup>119</sup>

The ears, although well separated from the underlying head-dress, seem to have been made in one piece with the rest. The ridges at the edge of the ears are sharply set off, while the inside areas are shaped like inverted Ls. The eyelids are precisely defined and on the upper lids undercut by a groove. The nose is remarkably broad and the mouth out of axis.

All details of the modeling are somewhat obscured by the coat of gesso and gold foil. The latter is so thin that it wrinkled in many places when it was applied. The headdress is of colored gesso. The color is now dark green (Munsell 5G 3/2) but was originally blue (see above). Individual pleats are indicated by

lines of lighter color which radiate from the top of the head. On the side flaps, horizontal pleats are indicated by the same lighter color. The same—originally blue—color of a somewhat lighter hue (Munsell 5G 4/2) was used to write the inscription containing the *shabti* spell in version IIIA of Schneider (see "Sources" above and pl. 15d-g) and to render the eyebrows and continuations of the lids and brows that run towards the ears. The eyes themselves are surrounded by black lines, and the pupils are black dots.

There is a possibility that some kind of object was painted in black on the front of the upper arms, but the paint—if it was ever present—has faded so badly that neither the presence of any object held by the hands nor its shape and character can be ascertained (see also pl. 14b, showing the condition as found).

For the date, see below, under no. 6.

## 6. Three beaker jars with three bowls used as lids, MMA [14.3.71 A-B; 72 A-B; 73 A-B]

Sources: Mentioned on tomb card 1258.

PHOTOS: L 13-14, 1283 (here pl. 72f); L 13-14, 1428 (with inverted lids). New drawings by W. Schenck from the originals in the Oriental Institute, the University of Chicago (here fig. 10).

Found beside coffin no. 4, above. The pots were on the side nearer to the enclosure wall, i.e., west of the model coffin. Two were leaning against the coffin, while the third continued the row to the south. The bowls fit well as lids. Nile alluvium, fabric B 1, with sand and very small organic particles.

[14.3.71 A]: H. 20.1 cm.

[14.3.71 B]: H. 3.0 cm.

[14.3.72 A]: H. 19.2 cm.

[14.3.72 B]: H. 3.4 cm.

[14.3.73 A]: not remeasured; according to accession card, H. of jar with lid was 23.0 cm.

[14.3.73 B]: H. 3.7 cm.

Thrown; bases string-cut and finally hand-trimmed with a flat instrument. Red ochre wash was applied to all exterior surfaces except for the rims of the jars. All surfaces were then burnished by rubbing. Some traces of wear beneath the rims of the bowls where the wash has worn off indicate previous use. Color of the uncoated parts: Munsell 7.5YR 5/4; of the coating 10R 5/6.

The contents of jar MMA [14.3.73A] were sampled and analyzed in 1984 by Ian Stupakoff. He describes the material as "dark brown, mostly fine grained." Among this material he found two insects which he identified as "beetles of the genus *Tribolium*, brown and about 5 mm. They are pests of flour and other stored products and are known as flour beetles." In view of this identification, it is possible that some kind of food was originally kept in the jars.

<sup>119</sup> For the shape of the headdress, cf. for instance: Cairo CG 47619 (Percy E. Newberry, *Funerary Statuettes and Model Sarcophagi*, CG Nos. 46530-48273 (Cairo, 1930) I, 178; III, pl. 12) from Abydos, North Cemetery. See Schneider, *Shabtis* I, 180. The Abydos figure, however, had a wedge-shaped back part of the wig. *Rishi* coffins must also be taken into consideration as further parallels: H. Stadelmann-Sourouzzian in *LÄ V*, 268 s.v. "Rishi-Sarg." The anthropoid coffin of Senebtisi had elements of a similar headdress preserved (Mace and Winlock, *Senebtisi* 42-45, 38, fig. 23 and pl. 20), but Winlock states clearly that there were no flaps of the kind seen in Wahnoferhotep.

It is important to realize that although the late Middle Kingdom repertoire of pottery shows in type-group Engelbach 68, which is certainly of the Thirteenth Dynasty,<sup>120</sup> some shapes similar to the Wahnoferhotep jars, the nearest parallels to these jars are nevertheless found in the repertoire of the later Second Intermediate Period to the early Eighteenth Dynasty.<sup>121</sup> A date for the Wahnoferhotep group in the advanced Thirteenth Dynasty is therefore strongly indicated; indeed, the possibility of a post-Thirteenth Dynasty date cannot be excluded.

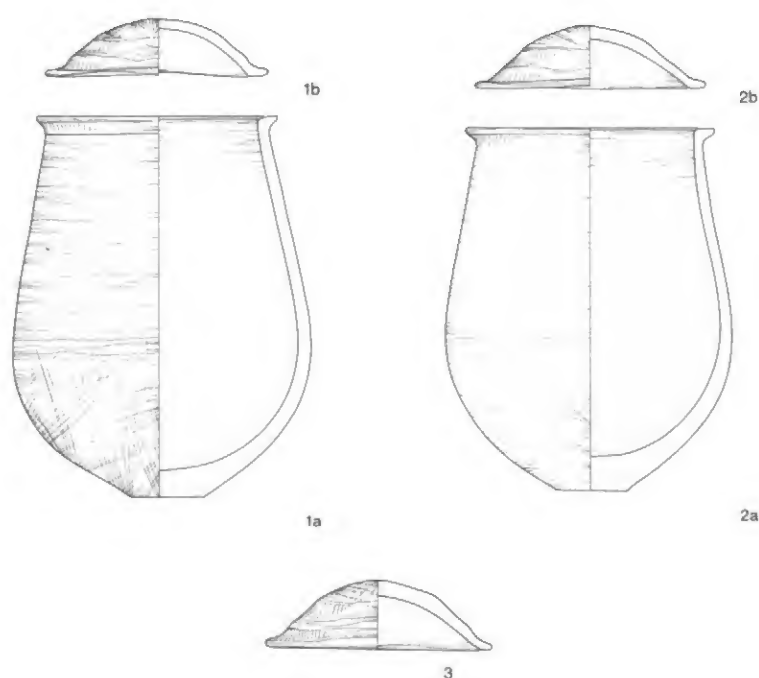


Fig. 10. Pottery found with the coffin of Wahnoferhotep. See pl. 67f.

## 7. Two small boxes

Sources: PHOTOS: L 13-14, 1021, 1022 (here pl. 10a).

Found south of the cabin at a height that suggests they were buried under the floor, which sloped downwards in this area (page 25).

Wood.

The boxes were very rough and simple objects, which the excavators did not keep.

In summing up the finds from the area of the cabin, it is possible to state that not only during the late Twelfth, but also during the advanced Thirteenth Dynasty—if not later—the space in front of the northern gate and around the “bathhouse” was considered to be sacred ground in which it was suitable to deposit magical objects. This need not necessarily mean that the bathhouse still functioned as such during that time (see page 30), but the pavement floor of the court west of it was evidently not yet covered by large amounts of debris. It is also probable that the surrounding brick causeway wall was still more or less intact.

<sup>120</sup> Engelbach, *Harageh* pl. 40, nos. 68A to 68T. Only 68F and 68L appear in the tomb register pls. 58–62. In both cases, the jars are accompanied by clear Thirteenth Dynasty types: 68F (pl. 59 in tomb no. 128) was found with the hemispherical cup type 7N and 7N<sub>2</sub>, which have vessel indices of 127 and 131 (cf. page 141 and Do. Arnold, *MDAIK* 38 (1982) 60–62, fig. 17), and 68L was found in tomb no. 324 (pl. 60) again with type 7 and in addition type 10W which is a carinated-footed bowl of Thirteenth Dynasty to Second Intermediate Period date.

<sup>121</sup> George Brunton, *Qau and Badari III* (British School of Archaeology in Egypt 1926. London, 1930) pl. 28, nos. 162–165. Note that the small base is found only here, not in the late Middle Kingdom types quoted in n. 120. For the rim see especially pl. 29, no. 167. If the name Wahnoferhotep is indeed a reference to a king with the name Noferhotep (Hayes, *Scepter I*, 350), this could very well be one of the later kings of that name. Cf. J.V. Beckerath in *LÄ IV*, 374–375 with references. No Wahnoferhotep appears in the family of Neferhotep I in Bettina Schmitz, op. cit. 211–213.

## CHAPTER IV

# The Mortuary Temple

### 1. General Remarks

(pls. 1–2, 105; foldouts I–II)

Sources: No noteworthy tomb cards or diary notes.

*BMMA* 4, July 1909, 120–121, figs. 2–3; 10, Feb. 1915, supp., 8, figs. 3–4; 15, July 1920, II, 4, fig. 1; 21, March 1926, II, 36–40, figs. 1–7.

PHOTOS: (general views after excavation): L 13–14, 1181–1187.

PLANS: (general; no details):

AM 248 (1:200). Used for *BMMA* 15, July 1920, II, 4, fig. 1.

AM 2608 (1:500). Reconstruction of pyramid precinct.

AM 2660 (1:200).

AM 2661 (1:200).

AM 2663 (1:200).

AM 2665 (1:100). Inked pencil drawing of good quality (see here foldout II).

AM 2666 (1:100). Reconstruction.

The pyramid temple of Senwosret I is badly destroyed; only a few blocks of its walls remain in place. Fortunately, the pavement and foundations are well enough preserved to permit reconstruction of the plan of the temple with the help of comparisons to plans of Old Kingdom mortuary temples. The structure is the best known example of a royal mortuary temple of the Twelfth Dynasty, since that of Amenemhat I and Senwosret II are reduced to a few outlines, those of Amenemhat III completely lost and those of Amenemhat II and Senwosret III as good as unexplored. Not only the architecture, but also the numerous remains of its relief decoration—about 600 fragments were registered by the Expedition—contribute to the reconstruction of this building and others of its kind. These fragments will be published in a later volume.

The temple was first explored in 1894–1895 by Gautier and Jéquier, whose two hundred workmen excavated the causeway, the brick chamber, and the court of the temple.<sup>122</sup> Discoveries included the ten well-known seated figures of the king (page 56), the Osiride statues (page 21), and the granite altar of the court (page 44).

Thirteen years later, the expedition of the Metropolitan Museum of Art began its excavations of the site, again at the upper end of the causeway. This preliminary campaign yielded the Osiride statue now in the Metropolitan Museum of Art (MMA 08.200.1), which was found together with a fragment of a “protodoric” column (see page 54).

During the main season of excavation in 1908/09, the causeway was cleared for about 100 m. to the east. In this area another Osiride statue (MMA 09.180.529) was found, together with

fragments of wall reliefs. The Expedition cleared nearly the entire area of the temple, beginning with the *Pr-wrw* (see page 42) and proceeding from there to the west and north. The mounds of debris, 6–8 m. high, which had covered the ruins were removed with the help of a decauville, the rails of which led from the area of the room of the five niches, west of the brick chamber, out of the temple to the southeast. This major season saw the discovery of the granite column base, many relief fragments, and the lion’s head spout pp. 53–54.

The ramp that supported the decauville was not removed until the 1913/14 season, when the temple was carefully cleared, and some special studies were carried out—for example, at the northern and southern ends of the transverse corridor and the crypt of the temple. In the same season, the major focus of excavation was the strip north and east of the temple, including the mastaba of Imhotep and the cabin where the model vases, the *shabti*-box, and other objects were found (pages 23–).

According to a report in the *Bulletin* (*BMMA* 19, Dec. 1924, II, 33–34), the back part of the temple was cleared in 1923–1924. No further documentation of this work exists and no plan was drawn before the season of 1924/25, when the final drawing AM 2665 (1:100) was begun but left unfinished.

The next series of photographs, taken in the two seasons of 1932–1934, shows that in the intervening years the site suffered heavy damage at the hands of villagers:<sup>123</sup> all the brick walls, which had stood 1–1.5 m. high, were flattened to ground level; pyramid 9 was reduced to a small mound of rubble; and, in addition to the great quantity of loose blocks that had covered and surrounded the temple in 1924/25, even the huge blocks from the back wall of the room of the five niches were removed. The condition of the temple has since deteriorated even further, as can be seen by comparing the photographs of the 1930s to the present state.

The depletion of the remains of the temple determined the course of action of the new campaigns of 1984–1987.

The areas selected for cleaning and remeasuring in the new campaign are:

- a) the eastern front of the temple with the upper end of the causeway;
- b) the southern gate in the eastern front of the temple;
- c) the so-called brickchamber in the southeast corner of the temple;
- d) the central court of the temple;
- e) the southern exit of the transverse corridor;
- f) the northern exit of the transverse corridor;
- g) the crypt at the north side of the temple.

The mortuary temple of Senwosret I is built along the east-west axis of the pyramid complex. Its front section lies in the

<sup>122</sup> *Licht* 16–22; Gautier, *Fouilles de Licht*, 13–14, figs. 9, 16–18. They did not, however, penetrate into the back part of the temple.

outer court of the pyramid, its back section in the inner court. The temple is constructed almost completely in limestone of varying grades. Stone of good quality, certainly imported from some unknown quarry on the east bank of the Nile (the so-called Tura limestone), is always used for parts intended to be visible. It is found less frequently in the cores of walls and in the foundations; these features are composed chiefly of several local limestones of poorer quality that apparently originate in different places. Only a few elements are of red granite: the three main doorsills in the crosswalls of the temple; the column base, column, and architrave of the square antechamber (see page 47); and, possibly, the door frames surmounting the three sills. No alabaster, quartzite, or basalt was used in the architecture. The temple was conceived and executed according to a single building plan; few alterations were carried out during construction. It was completely finished during the reign of Senwosret I and shows no traces of later alterations or additions until its final destruction by stone robbers, starting probably in the Eighteenth Dynasty.

The temple stood with its pavement 1.20 m. above the flattened surface of the desert, apparently consisting of hard-packed sand or gravel on a pebble conglomerate, that has been smoothed over with Nile mud. The foundations and—when they exist—the subfoundations are constructed as a continuous platform that does not indicate the layout of the walls. The walls of the superstructure can be recognized only from the traces and setting lines on the top surfaces of foundation blocks and paving slabs. It can be seen from the remains, however, that the 5 c. (2.625 m.) thick walls were constructed with well-dressed casing blocks containing a fill of rough fieldstones. The thinner walls, measuring 2 c. (1.05 m.), were probably built with stones extending the full width of the wall. The technical aspects of the construction of the temple will be discussed in a separate chapter in the second volume of the publication.

## 2. *Pr-wrw* (Atrium; *hall d'entrée*)

Sources: Photos: L 8–9, 233, 238; L 13–14, 1198–1199. View from the distance: L 8–9, 244–245.

PLANS: None beyond AM 2665 (1:100).

The upper end of the causeway terminates at the western face of the outer enclosure walls, where three gates—two flanking the *Pr-wrw*,<sup>124</sup> the central one piercing its façade—furnish access to the funerary complex. The two flanking gates permit entry from the lateral corridors of the causeway into the outer enclosure; the outer side of each doorframe joins the wall of the outer enclosure, while the inner side abuts the front wall of the *Pr-wrw*. The central, limestone corridor of the causeway leads to the main gate of the *Pr-wrw*, placed in the center of the façade. The huge granite sill is *in situ*, but all traces of the rest of this central gate have disappeared.<sup>125</sup> The preserved grooves for the insertion of the wooden door and the pivot indicate a door 2.5 c. wide within a gateway 3 c. in width. The frame of the door was probably of granite and was probably inscribed (see page 98 and fig. 46).

The façade of the *Pr-wrw*, not visible from the causeway, was furnished with a huge cavetto and torus, as was the rest of the temple. A single block about 0.70 m. high (fig. 18), found immediately north of the building, has since disappeared. The traces of the torus of the southeast corner drawn on the original

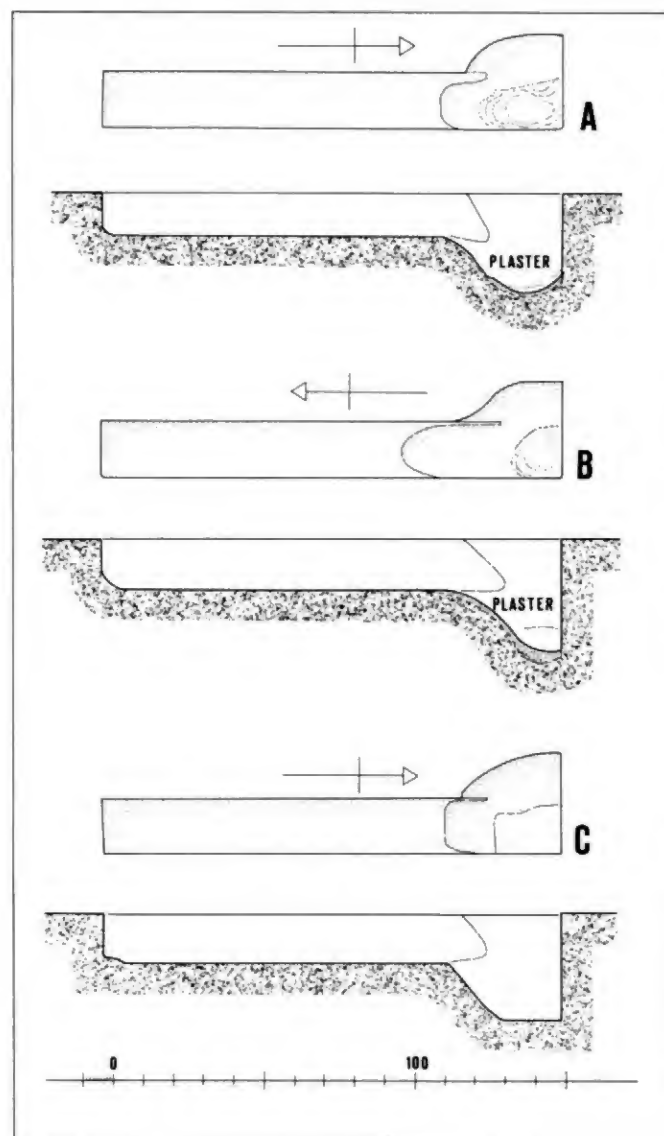


Fig. 11. Grooves in granite thresholds for insertion of doors at: A: east gate of *Pr-wrw*; B: west gate of *Pr-wrw*; C: west gate of pillared court of the mortuary temple. Scale 1:25. See pls. 17a, 81 and foldout IIIa.

Expedition plan have been obliterated; a rounded impression in the pavement near that corner seems to be a natural formation in the limestone. Furthermore, the few surviving wall blocks that are shown on the old Expedition plans as connecting the upper end of the causeway with the eastern façade of the *Pr-wrw* have also disappeared.<sup>126</sup>

The *Pr-wrw* dominates the front of the mortuary temple. It was 32 c. (16.80 m.) wide and 23.55 (45 c. = 23.625 m.) long outside (see below). The enormous thickness of its side walls (11 c. = 5.775 m.) is explained by the need to carry the roof blocks that originally spanned its interior. Until 1922/23 the

<sup>123</sup> Attested by comparing photo L 13–14, 1187 with L 33–34, 269.

<sup>124</sup> Since the terms “vestibule” and “antechamber” are being used for other rooms in mortuary temples the ancient Egyptian term *Pr-wrw* is preferable. For its identification with the entrance hall see Pauline Posener-Krieger, *Festschrift Siegfried Schott* (Wiesbaden 1968) 112; Hartwig Altenmüller, *Die Texte zum Begräbnisritual in den Pyramiden des Alten Reiches* (ÄgAbh 24, 1972) 173; D. Arnold, *MDAIK* 33, 1977, 6.

<sup>125</sup> Gautier’s expedition could still recognize traces of mortar in which the frame was bedded (Licht 21). It is not certain, however, that Licht fig. 15 represents this threshold and not one of the two others west of it.

<sup>126</sup> They show that there cannot have been a side entrance from the north or south into *Pr-wrw*, as would appear today from two huge gaps in the area of the side walls.



lowest course of the rough blocks of the core were preserved, together with the southern (and to some extent the northern) foundation blocks of its casing, thus enabling us to calculate the width of the building as 32 c. The interior width of the hall can be determined on the basis of setting lines on a block near its northeast corner; these show that, in agreement with the *Pr-wrw* of other temples, the hall was 10 c. wide.<sup>127</sup> The interior length can only be estimated from the distance between the grooves in the eastern and western door sills; these suggest a length of 40 c. (21 m.), which again agrees with the dimensions of other examples of *Pr-wrw* halls.

In spite of the considerable width of the hall, there is no doubt that it was covered by a stone roof. In the better preserved temples of Teti<sup>128</sup> and Pepi I, these halls were spanned by a false vault formed by a double row of about 15 huge beams pushed toward the center from both sides and carved from below into a low vault. Remains of one ceiling block from the *Pr-wrw* of Senwosret I may be preserved; it is so defaced, however, that its original dimensions cannot be established. Each end wall was pierced by a window placed above the doorway<sup>129</sup> and below the semicircular upper section of the wall. In the temples of Teti<sup>130</sup> and Djedkara-Isesi<sup>131</sup> these semicircular areas were decorated with scenes showing the enthroned king assisted by Anubis or Ptah and facing the gods of the southern regions, Nechbet, Osiris, or Amun; on both walls, he looks toward the south. Three fragments of such tympanum decoration from the *Pr-wrw* of Senwosret I are preserved;<sup>132</sup> they confirm our reconstruction of the vaulted ceiling.

The height of the building is unknown and can be reconstructed only by comparison with the *Pr-wrw* of Teti, which seems to have been 6.80 m. high inside, at the apex of the vault, and 5.75 m. high at the side walls. Similar dimensions are reached by using the proportion of 10:1 to calculate the total outside height on the basis of the fragment of cornice mentioned above, with a height of about 70 cm. The reconstruction of the wall decoration of the *Pr-wrw* of Pepi II seems to yield slightly different results.<sup>133</sup>

The following list shows the range of dimensions of the known *Pr-wrw* halls in relation to that of Senwosret I:

COMPARATIVE LIST OF DIMENSIONS  
OF PR-WRW HALLS

King	Length		Width	
	Calculated	Measured	Calculated	Measured
Djedkara	41 c. = 21.525 m.	21.60 m.	10 c. = 5.25 m.	5.20–5.25 m.
Unis	37 c. = 19.425 m.	19.38 m.	10 c. = 5.25 m.	5.22 m.
Teti	40 c. = 21.00 m.	20.95 m.	10 c. = 5.25 m.	5.25 m.
Pepi I	40(?) c. = 21.00 m.	21.35 m.	10 c. = 5.25 m.	5.21(?) m.
Pepi II	38 c. = 19.95 m.	19.90 m.	10 c. = 5.25 m.	5.25 m.
Senwosret I	40 c. = 21.00 m.	—	10 c. = 5.25 m.	5.25 m.

3. The Court (*cour péristyle*)  
(pls. 18, 81; foldout III a)

Sources: PHOTOS: L 7–8, 369 (before work); L 13–14, 1181–1188 (all views from the pyramid; no details).  
PLANS: None beyond AM 2665 (1:100).

After the *Pr-wrw*, the court is the next major section of the front part of the mortuary temple. It is connected with the *Pr-wrw* by a gate of which the sill, still in position, consists of two huge

granite slabs with the well-preserved groove for the insertion of the door and its pivot. The door opened from the court into the *Pr-wrw*, and so the gateway should be considered as an entrance not into the court, but instead into the *Pr-wrw*. Gautier was able to describe traces of mortar that indicated the position of the door frame,<sup>134</sup> but these have since disappeared; only the better polished granite surface outside the footline of the court wall helps to reconstruct the frame. A door 2.5 c. wide and a doorway 3 c. in width may be reconstructed. A corresponding door in the middle of the western wall of the court led into the transverse corridor (see page 45).

The dimensions of the court are unexpectedly large. Its length of 45 c. nearly equals the longest courts of the mortuary temples of the Old Kingdom, and its width of 37 c. surpasses them all.<sup>135</sup> The lateral widening was achieved partly by reducing the storerooms that confine the extent of the court in the Old Kingdom models. The enlargement of the court demanded an increase in the number of pillars from the traditional four on the short side to six and from six or seven on the long sides to eight.

The walls and pavements of the court rest on a foundation of limestone slabs about 1 c. thick. The pavement, also 1 c. thick, consists of limestone of rather poor quality; its surface has disappeared, except in the northwest corner, the only place where the original level can be measured. In the area of the pillars there seems to be a subfoundation consisting of two layers of *dabsh*.<sup>136</sup>

The pavement slabs were laid in the following sequence. A continuous row of slabs was laid crosswise along the east-west axis. At the same time, a ring of slabs was laid around the four sides of the court in the following way: a separate square slab was set to carry each pillar; the space between each slab and the wall was filled by another square slab; and the spaces between the pillars were filled by single, elongated slabs. This arrangement resulted in a continuous straight border surrounding the central open space of the court. Finally, the spaces between the border and the east-west row of slabs across the center of the court were filled in by two or three less regular rows of slabs.

While the older expeditions were able to recognize and draw the traces of the most of the pillars,<sup>137</sup> in the new campaign we could only deduce their positions from slight elevations in the pavement where the pillars had protected the surface from weathering. The pillars seem not to have been monolithic, but to have been formed from several blocks. Some were seen and described by Gautier's expedition: "deux ou trois de ces pilastres montrent encore leurs assises inférieures. . . ."<sup>138</sup> The height of

<sup>127</sup> The position of the core block erroneously drawn as overlapping the corner of the Expedition plan (foldout II) would contradict such a reconstruction.

<sup>128</sup> Lauer, *Téti* 12.

<sup>129</sup> Lauer, *Téti* 14, fig. 3, pl. 38.

<sup>130</sup> Lauer, *Téti* pls. 22–23 [block 1].

<sup>131</sup> Only poorly documented in *BIFAO* 67 (1969) 156 n. 2, pl. 39.

<sup>132</sup> Licht 20, fig. 13; Hayes *Scepter* I, 187, where Hayes prefers to claim them for the similarly shaped offering hall.

<sup>133</sup> See Lauer's discussion (*Téti* 12) of the question whether the walls of Pepi II were 11 or 12 layers high, i.e., 5.775 or 6.30 m.

<sup>134</sup> Licht 21. See our note 125 for the problem of identifying the plan Licht fig. 15.

<sup>135</sup> After the temple of Userkaf.

<sup>136</sup> Visible in the hole made by treasure hunters southeast of the altar.

<sup>137</sup> Licht figs. 10, 14 indicate seven pillars in the northwest corner.

<sup>138</sup> Licht 20. The Expedition found several fragments of the decoration of the pillars in sunk relief.

the pillars is not known, but would have been 4.20 m. at the least. Jean-Philippe Lauer estimates the height of the pillars of Teti as 8.5 c. (4.46 m.).<sup>139</sup>

Usually the pillars and architraves in mortuary temples are granite. In the court of Lisht, however, the pillars were limestone, and since no granite fragments of architraves have been found, it may be assumed that these members were also limestone.

No measurements of the pillars were taken by the earlier expeditions, when the condition of the monument would have permitted it. It is necessary now to combine the evidence of the traces that are still measurable with calculations based on the overall proportions of the court. The results of these computations are as follows:

The pillars would be 15 x 15 p. (1.125 x 1.125 m.) wide, and set up at distances of 21 p. (1.575 m.). The four corner pillars, however, were not square, but measured 15 x 21 p. in order to offer an adequate bearing surface for the ends of the two architraves meeting at each angle.

The calculation in palms is unusual, but the complicated arrangement of the pillars apparently did not permit the use of whole or half cubits, while the use of fingers' breadths would have necessitated an impractical precision.

The layout of the court seems to have been

Length of court (east to west)		Width of court (north to south)	
Space to wall	24 palms	Space to wall	26 palms
Pillar I	15	Pillar I	21
Space	21	Space	21
Pillar II	15	Pillar II	15
Space	21	Space	21
Pillar III	15	Pillar III	15
Space	21	Space	21
Pillar IV	15	Pillar IV	15
Space	21	Space	21
Pillar V	15	Pillar V	15
Space	21	Space	21
Pillar VI	15	Pillar VI	21
Space	21	Space to wall	26
Pillar VII	15		259 palms or 37 cubits
Space	21		= 19.425 m. Width as
Pillar VIII	15		measured: 19.34 m.
Space to wall	24		
	315 palms or 45 cubits = 23.625 m.		
	Length as measured: 23.60 m.		

The difference of 8.5 cm. between the dimensions as calculated and as measured is in line with similar discrepancies observed in comparable buildings (see comparative lists on pages 43, 45).

Except for a block directly south of the eastern gate of the court, the only wall blocks still *in situ* are in a short section of the western end of the north wall (pl. 18d). The subfoundations

of all the walls of the court, however, were excavated by the Expedition. The walls were constructed of relatively thin slabs of casing surrounding a rough core. At the north side of the court, the remaining casing slabs preserve the base line of the decoration above the undecorated zone of the socle.<sup>140</sup> The condition of this feature has not changed greatly since the time of Gautier's expedition.

In 1884, Gautier discovered a completely preserved, decorated altar of gray granite in the court.<sup>141</sup> It stood in or near its original location, not in the center of the court, but toward the northwest corner, a position already attested in some Old Kingdom examples.<sup>142</sup> The altar, 1.65 m. square and 1 m. high, bears inscriptions and reliefs indicating that it was dedicated to the king in his aspects such as *ntr nfr*, *nb jr.t h.t*, *nb-t3wj*, and *nb-h'.w*.

Damage caused by treasure hunters to the pavement southeast of the altar between 1884 and 1906 enabled us to see the foundations of the court, the subfoundations of the pillars, and the flattened *gebel* below (pl. 18b).

East of the hole, we discovered two small pits cut into the existing pavement down to the foundations (pl. 18c). A similar small pit was found in the pavement close to the southeast corner.<sup>143</sup> These holes were certainly cut through the pavement when it was in place, and each was afterwards carefully closed with a single, thinner slab. Our discovery of some potsherds under the slabs and some traces of blackening in the corners of the pit, where apparently something had been burned, shows that these holes were not connected with repairs to the pavement, but were dug for another purpose. Similar pits have been discovered elsewhere in the pyramid precinct (pages 92-93). The evidence seems to indicate that builders' offerings had been deposited after the completion of the construction, perhaps to mark the end of the work and the consecration of the structure. The pits would thus represent pendants to the foundation deposits connected with the beginning of the work.

A drainage channel for rainwater led out of the court to the north, between the third and fourth pillars from the east. The pavement still shows a slightly sloping depression which collected the water and led into an underground channel. This channel passed under the foundations of the north wall and the northern wing, into the outer court. Only a part of the channel under the pavement of the northern wing is preserved. We

<sup>139</sup> Lauer, *Téti* pl. 38.

<sup>140</sup> Height above court level: 1.165 m. (lower end of band).

<sup>141</sup> *Licht* 22-26, figs. 16-20, pl. 8; the position of the altar is shown in fig. 14 (view before robbers' hole was made). For the altar, Cairo 32 876: Ahmed Bey Kamal, *Tables d'offrandes* (Cairo, 1909) 1-3 [no. 23001], pls. 1-2.

<sup>142</sup> Unas, Teti, Pepi II. For a discussion of the placement of altars: Ricke, *Bemerkungen AR II*, 65.

<sup>143</sup> Dimensions: 0.65 x 0.65, 0.50 x 0.70, 0.53 x 0.50-0.60 m.

COMPARATIVE LIST OF COURTS OF PYRAMID TEMPLES

King	Width		Length	
	Calculated	Measured	Calculated	Measured
Sahura	32 c. = 16.80 m.	16.70 m.	44.5 c. = 23.363 m.	24.00 m.
Niuserra	28 c. = 14.70 m.	14.62 m.	40 c. = 21.00 m.	21.00 m.
Djedkara	30 c. = 15.75 m.	15.81 m.	45 c. = 23.625 m.	23.55 m.
Unis	25 c. = 13.125 m.	13.10 m.	42 c. = 22.05 m.	21.85 m.
Teti	30 c. = 15.75 m.	14.95 m. (sic)	45 c. = 23.625 m.	22.85 m. (sic)
Pepi I	31 c. = 16.275 m.		47 c. = 24.675 m.	
Pepi II	30 c. = 15.75 m.	15.65 m.	46 c. = 24.15 m.	24.00 m.
Senwosret I	37 c. = 19.425 m.	19.34 m.	45 c. = 23.625 m.	23.60 m.



COMPARATIVE LIST OF COLUMNS AND PILLARS IN TEMPLE COURTS

King	Number	Types	Heights (excluding bases)	Material
Sahura	4 x 6	palm columns	6.30 m.	granite
Niuserra	4 x 6	papyrus columns (of 6 papyrus stalks)	5.37 m.	granite
Djedkara	4 x 6	palm columns	?	granite
Unis	4 x 7	palm columns	6.12 m.	granite
Teti	4 x 7	pillars	4.46 m. (estimation lower)	granite
Pepi I	4 x 7	pillars	UNPUBLISHED	granite
Pepi II	4 x 7	pillars	3.50 + x m.	quartzite
Senwosret I	6 x 8	pillars	?	limestone

found its outlet under the north wall completely choked with potsherds of Middle Kingdom date. The sherds were caked together in a solid mass which had certainly put the drainage system out of use; apparently it was never subsequently cleaned.

4. The Transverse Corridor (cross corridor, *couloir transversale*)  
(pls. 19a–c, 82–83)

Sources: PHOTOS: L 13–14, 1213–1215, 1217–1219, 1221, 1224–1225.  
PLANS: None beyond AM 2665 (1:100).

When the Expedition cleared the transverse corridor, this important element of the pyramid temple was in a poor state of preservation. Only some pavement slabs near the northern and southern gates were preserved, together with traces of these gates, and a few foundation blocks bearing the scratched setting lines for the west wall. It proved possible, however, to establish the width of the corridor, as 6 c. (3.15 m.), and the length as 76 c. (39.90 m.).

The corridor was entered from the court by a gate, the granite sill of which is *in situ* and shows the groove for the insertion of the wooden door and its pivot (fig. 11 C). The direction in which the door opens indicates that entrance was from the court into the corridor.

The pavement slabs mentioned above preserve the grooves for the northern and southern doors of the corridor; they lie 43.83 m. apart, and suggest a door 2 c. wide in a doorway 2.5 c. in width. Both doors opened into the corridor, indicating the main direction of traffic. The southern gate also preserves a hole in the pavement for a wooden stopper to prevent the closed door from being opened from the outside. It is not clear

why the northern gate is set not in the center of the north wall, but considerably toward the east; the displacement must be due to some feature in the northwestern corner of the corridor. The northern gate is also set about 20 cm. deeper than the southern gate.

About 10 m. south of the northern gate, the base of a limestone statue of the king was found in April 1914.<sup>144</sup> As it had fallen into the foundations of the west wall, it is possible that the statue did not originally stand in the corridor, but had been moved from another place, most probably the room of the five niches (see page 46). Outside the northern gate of the corridor was found another important piece of sculpture, the head of a lion from a waterspout (page 53).<sup>145</sup>

Because no element of the wall decoration has been found, or of the two windows that are assumed to have existed over the northern and southern gates, there is no indication of the height of the corridor. A height of 11 c. (5.775 m.) has been suggested for this feature in the temple of Unis.<sup>146</sup> If the width of the transverse corridor of Senwosret I was equal to half its height, we would expect the height to have been 12 c.

This list indicates that the dimensions of the transverse corridors are less uniform than those of other parts of the temples and must therefore not have been of primary importance.

<sup>144</sup> Photos L 13–14, 1226, 1227.

<sup>145</sup> Photos L 8–9, 296, 300–303.

<sup>146</sup> Lauer, *Ounas*, 44 fig. 29. His reconstruction shows that the space above the doorframe was decorated with a double scene of the king with gods (block in the Egyptian Museum, Cairo JdE 40 029), above which was the window, 4 c. (2.10 m.) wide and 1 c. (0.525 m.) high.

COMPARATIVE LIST OF DIMENSIONS OF TRANSVERSE CORRIDORS

King	Length		Width	
	Calculated	Measured	Calculated	Measured
Djedkara	71.5 c. = 37.538 m.	37.50 m.	6 c. 2 p. = 3.30 m.	3.30 m.
Unis	49.5 c. = 25.988 m.	25.90 m.	5 c. = 2.625 m.	2.50 m.
Teti	75.5 c. = 39.638 m.	39.68 m.	5 c. = 2.625 m.	2.62 m.
Pepi I	77 c. = 40.425 m.	40.50 m.	5 c. = 2.625 m.	2.52 m.
Pepi II	75.5 c. = 39.638 m.	39.60 m.	5 c. = 2.625 m.	2.55 m.
Senwosret I	76 c. = 39.90 m.	[39.90 m.]	6 c. = 3.15 m.	3.15 m.

## 5. The Room of the Five Niches (*salle aux cinq niches*) (pl. 19 d)

Sources: PHOTOS: L 13–14, 1187, 1202, 1203.  
PLANS: None beyond AM 2665 (1:100).  
DRAWING: AM 3084.

In mortuary temples comparable in plan to that at Lisht, a small staircase in the center of the back wall of the transverse corridor usually leads up through a roomlike niche to the main statue chamber, which is situated at a higher level. The material recorded by the original Expedition shows that by the time of its clearing, not a single floor or wall block from that room was left; only the foundation blocks and two or three layers of the rough core blocks of the wall west of the chamber were still standing. These blocks prove at least that no *serdab*-like chamber was hidden in that place. From the level of the pavement in the square antechamber (pl. 20a), we may conclude that the level of the room of the five niches was 0.74 m. (10 p. = 0.75 m.) above that of the transverse corridor. The proportions of the temple permit the chamber to be reconstructed with five statue-shrines, and comparisons with similar temples suggest that one door led to the storerooms in the north and another to the vestibule in the south. All dimensions of the room, however, remain uncertain.

The Expedition found a fragment of raised relief<sup>147</sup> with an inscription just below a curved ceiling decorated with stars. The line of the curve apparently belongs not to a barrel vault but instead to a vault of the *pr-wr*-chapel type. The fragment might well be part of one of the five statue-shrines, and could establish the shape of their ceilings. The inscription included a cartouche of Senwosret I, which might indicate that a statue of the king stood in that niche. If this was the case, the evidence of Lisht would accord well with the observation of Pauline Posener-Kriéger<sup>148</sup> that each niche at Abusir contained a statue of the king in different aspects—as Osiris, as king of Upper and of Lower Egypt, and two others.

The base of one of the statues might survive in the limestone base found in 1913–14 in the debris of the nearby west wall of the transverse corridor (see page 45 and pl. 25b).<sup>149</sup> The king, with feet placed together, stands on the motif of the Nine Bows incised on the top surface of the block; he probably leaned against a dorsal pillar. To judge from the size of the feet (about 0.42 m. long), the statue would have been somewhat over life-size. The inscription in front of the feet stresses the funerary aspects of the figure:

“The living Horus Living-in-births, the Two Ladies Living-in-births ////, the king of Upper and Lower Egypt Kheperkara beloved of Ptah-Sokar/////.”

The height of the statue, about 2.70 m. without the crown, together with the fact that the floor of the chapel was apparently raised, shows that the ceiling of the room of the five niches must have been higher than that of the surrounding storerooms—perhaps so much higher that a window for illuminating the shrines could have been accommodated in the top part of the east wall, above the entrance. Lauer reconstructed the comparable room in the temple of Teti with a height of 5.70 m. (11 c. = 5.775 m.), but he advanced no arguments for the reconstruction; the room might well have been higher.<sup>150</sup>

## 6. The Vestibule

Although no paving blocks remained in the area where the vestibule would be expected, comparisons with the usual layout of mortuary temples of the Old Kingdom would demand the existence of such a room at Lisht. The plans prepared by the Expedition did not offer a reconstruction of the room, because no good examples of such structures were known at that time.

## 7. The Square Antechamber (*antechambre carrée*) (pls. 17 b–d, 20, 84)

Sources: PHOTOS: L 8–9, 264, 265, 273, 274; L 13–14, 1190, 1191.  
PLANS: AM 2665 (1:100).

There is abundant evidence for the existence of a square antechamber in the temple of Senwosret I. This chamber—an important part of every pyramid temple since Niuserra—customarily has a square plan of 10 x 10 c. (5.25 x 5.25 m.) and an octagonal pillar or a column in the center.

The huge red granite base of the central column at Lisht still stands in its original position in the middle of the room. Apparently the block was set in place with its surfaces undressed; only after carving began was it discovered that the block was too short to accommodate the round base of the column, and so the east and west sides of the circumference are truncated. Important traces of the column are visible on the surface. The center of the block is marked by a scratched-in cross, and single scratches 0.42 m. from this point indicate the four cardinal points. At a distance of 0.47 m. from the center there can still be seen—most clearly after rain, when the area covered by the column retains moisture more than the uncovered polished part—the outline of the column: it had the form of a bunch of twelve symmetrical stems, probably of papyrus, each about 0.18–0.20 m. wide. A bundled papyrus column, however, would be unique, because all known comparable rooms have either octagonal pillars or palm columns.<sup>151</sup> The block is 0.875 m. high, and is sunk into two layers of foundations; it rests on two subfoundation layers. The unusual strength of these foundations, extending 2.10 m. below the pavement, was necessitated by the height and weight of the column and of the entire construction of the room. Some paving stones are preserved southwest of the base; more had been seen by the original Expedition, and showed traces or setting lines of the walls of the room.

Not a single fragment of the column has survived, and we may be sure that it was removed in one piece and re-used elsewhere. Parts of the architrave, however, also of red granite,

<sup>147</sup> AM 3084. It was found “near central block in center of back part of temple,” which might suggest the room of the niches with its block of core masonry behind it.

<sup>148</sup> *Les archives du temple funéraire de Néferirkare-Kakai* (Cairo, 1976) 502, 544.

<sup>149</sup> The block measured 57.5 x 73.5 cm. It entered the Metropolitan Museum of Art with the number 14.3.2, but was discarded in 1950. See photos L 13–14, 1226–1227, which show the base as it was found, and 27984, taken in the museum.

<sup>150</sup> Lauer, *Téti* pl. 37.

<sup>151</sup> Only Niuserra seems to have had a bundled column, at least to judge from the temple plan of Borchardt (*Neuserre, Faltplan*). In his text (p. 59), however, he does not specify the type.

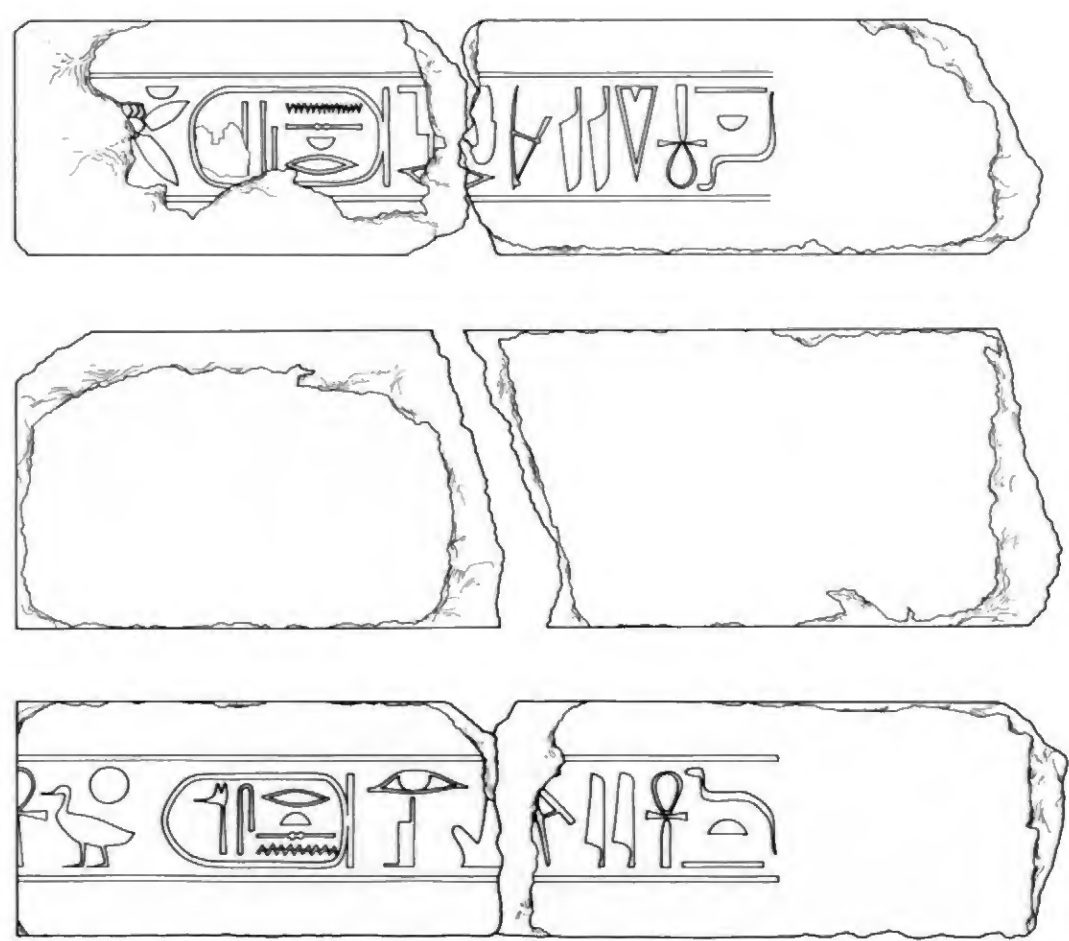


Fig. 12. View of the two sides and the top of the architrave of the square antechamber. Scale 1:25.  
See pl. 20b–c.

have survived. Originally the architrave, which carried the ceiling slabs of the chamber, ran east-west; it was made in two halves that met in the center of the abacus of the column. One of these halves, broken into two pieces, was found in 1908/09 under two to three meters of debris. It is 0.78 m. high, 0.98 m. thick, and 3.43 m. long. Only 2.47 m. of the beam was decorated, however, because the rest was embedded in the wall.

Both sides of the architrave were inscribed in sunk relief; the inscription starts in the center above the abacus with an  $\text{♀}$ -sign bisected by the joint. The text on the east side runs:

$\text{♀} \text{ (Ra) } \text{Senwosret}$  “The living son of Ra, Senwosret beloved by Osiris in eternity.” The text of the west side says:

$\text{Senwosret} \text{ (Upper and Lower Egypt) } \text{Senwosret}$  “The living king of Upper and Lower Egypt, Senwosret, beloved of Osiris, given life in eternity.”

It is remarkable that the artist wrote “*n-sw-bjt* Senwosret,” which is certainly an error; the *n-sw-bjt*-name of the king should be Kheperkara. This architrave is the only inscribed one ever found in a square antechamber. It is also interesting that in the inscriptions the king is not identified with the god Osiris, but clearly distinguished from him by the expression “beloved of.” The Osiris-aspect of that room seems to be unusually important for the wall decoration ordinarily emphasizes its *sed*-festival character.<sup>152</sup>

The other part of the architrave was dragged to the south and now lies between the southeast corner of the main pyramid and the western enclosure wall of its Ka-pyramid. Unfortunately, its decoration has been completely weathered away.

The height of the room is unknown. The diameter of the

central column suggests that its height, including the abacus but excluding the base, would have been between 6.20 m.<sup>153</sup> and 7.10 m.<sup>154</sup> With the addition of 0.88 m. to account for the base and the architrave, the minimum height of the room may be calculated as 7.08 m., while the maximum would be 7.98 m. This rather astonishing height finds no confirmation in the reconstruction of the comparable room in the complex of Pepi II, where the total height was found to be only 6.12 m.<sup>155</sup> It is this height that was adopted by Lauer in reconstructing the temple of Teti, but he adduced no additional evidence for it.<sup>156</sup> The square antechamber certainly rose considerably higher than the roof of the surrounding magazines, and probably also above all the other roofs of the temple; certainly, too, it would have been lit by one or two windows placed high in the walls.

COMPARATIVE LIST OF PILLARS OR COLUMNS  
IN SQUARE ANTECHAMBERS

King	Type	Material
Niuserra	hexagonal papyrus (?)–bundle	unknown (limestone base)
Djedkara	palm column (broken)	granite
Unis	palm column (removed)	quartzite
Teti	octagonal pillar (?)	quartzite
Pepi I	octagonal pillar	granite
Pepi II	octagonal pillar	granite(?)
Senwosret I	papyrus bundle (removed)	granite(?)

<sup>152</sup> For a discussion of the function of that room, see Ricke, *Bemerkungen* AR II, 35; D. Arnold, *MDAIK* 33 (1977) 10.

<sup>153</sup> Following the examples of the Old Kingdom at Abusir with a proportion of about 1:7.6 (Borchardt, *Neuserre*, Blatt 13: 0.63–0.71 m. lower diameter, 5.06 m. height).

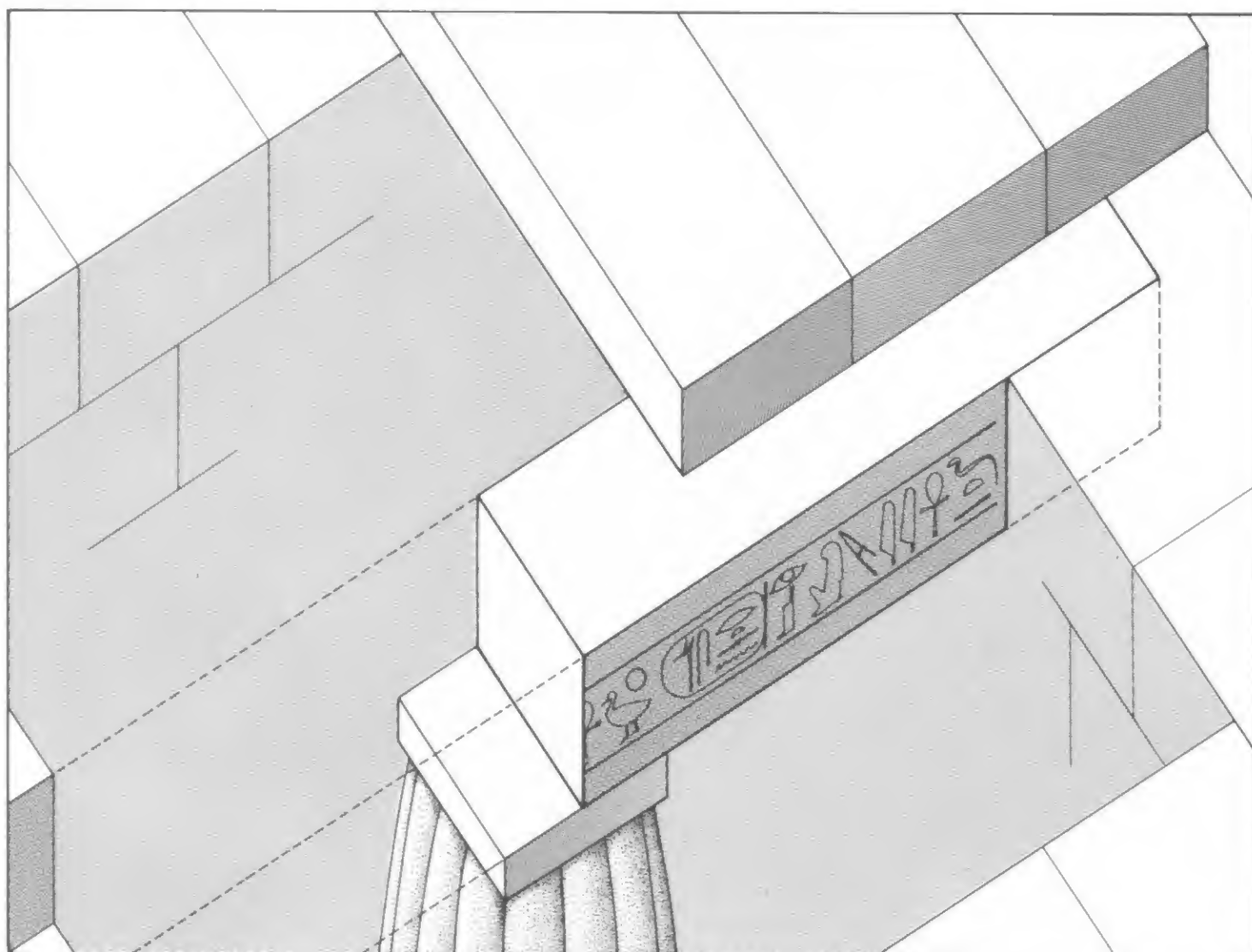


Fig. 13. Isometric reconstruction of the square antechamber with the architrave shown in fig. 12 in position.

## 8. The Offering Hall (*sanctuaire*) (pl. 21c)

Sources: PLANS: None beyond AM 2665 (1:100).

Unfortunately, little is left of the main sanctuary of the pyramid temple of Senwosret I. The west wall with its false door has completely disappeared. The side walls are destroyed all the way to the foundations. Since the foundations of these walls are separated from the foundations of the pavement by a clear joint, the pavement was probably of a different material. Alabaster is one possibility,<sup>157</sup> but no fragments of that very fragile material have been found so far. It is unlikely that alabaster slabs could have been set and later removed without leaving any fragments.

The clear foundation joint enables us to measure the width of the room, which was exactly 10 c. (5.25 m.). The length of 30 c. can only be reconstructed with the help of the general layout of the temple.<sup>158</sup> Nor is there any direct evidence for the south and north doors of the room. The position of the sanctuary in relation to the square antechamber and the storerooms in the northwest does not, however, permit any other reconstruction.

Important fragments of the wall reliefs are preserved.<sup>159</sup> They show offering bearers, and thus correspond very well with the usual decoration program of comparable offering halls. The

room certainly contained an offering table; fragments of a granite offering table found "at the east side of the pyramid" (page 94, fig. 43) may have belonged to it. One could also ask if an over life-size granite statue, the arm of which was found near the tomb of Senwosret-ankh,<sup>160</sup> might have originated in the offering hall of the temple.

Since the time of the original Expedition, the back part of the pyramid temple has been covered by debris sliding down the east slope of the pyramid. We could therefore not reach the juncture between pyramid and temple in the course of the new work. We know, however, from a short note of Ambrose Lansing<sup>161</sup> that "The paving of the temple even was torn out. It was two courses (of paving thickness) higher than the base of the pyramid. Several blocks of the lowest course of the casing even were torn out at that point."

<sup>154</sup> Following the examples of the Twelfth Dynasty at Hawara with a proportion of about 1:6.6 (LD I, 47: 0.89 m. lower diameter, 5.92 m. height).

<sup>155</sup> Jéquier, *Pepi II*, II, 35.

<sup>156</sup> Lauer, *Téti* 31, pl. 37.

<sup>157</sup> For example, as in the offering hall of the temple of Sahura (Borchardt, *Sahure* 57).

<sup>158</sup> For a comparative list of measurements of offering halls see page 57.

<sup>159</sup> For example Hayes, *Scepter I*, fig. 144.

<sup>160</sup> Lisht Journal II, 175. Registered as MMA 33.1.7.

<sup>161</sup> Letter, Ambrose Lansing to Albert M. Lythgoe, Feb. 13, 1924.

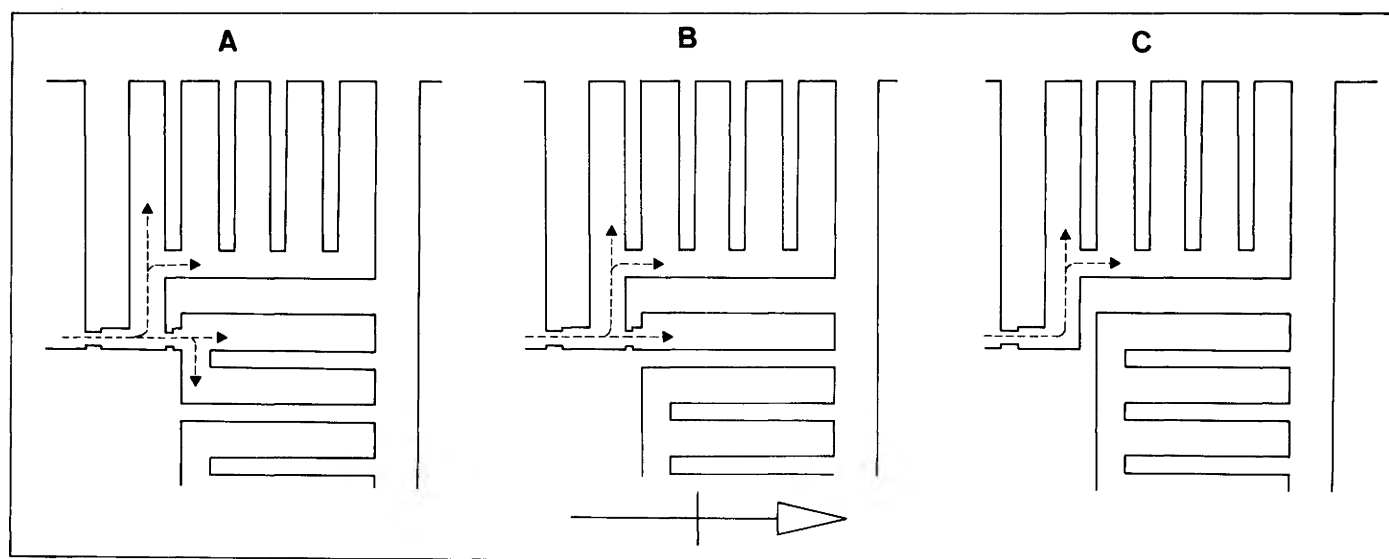


Fig. 14. Three possible reconstructions of the entrance to the northwest and north magazines of the mortuary temple. See foldout II.

A wash basin and a drainage system in the east wall of the Offering Hall would have been expected, but no traces of such installations could be detected in spite of intensive excavation in 1987.

By comparing this room with the offering halls of other mortuary temples one may reconstruct the roof with a double row of huge limestone blocks pushed toward the center from both sides and carved from below to form a low vault (pl. 105). We may also assume that the room was lit by a narrow window high up in the east wall.

## 9. The Magazines at the Rear of the Temple (Foldout 2)

Sources: PHOTOS: L 13-14, 1180-1188 (general view from pyramid); 1217-1219.  
PLANS: AM 2665 (1:100).

The western part of a mortuary temple ordinarily contains four groups of two to five elongated chambers each with two floors and therefore having rather low ceilings. These rooms are considered to be magazines.

The magazines of the temple of Senwosret I have almost completely disappeared; fortunately, a few wall blocks and setting lines on the pavement slabs were seen by the original Expedition and included in the plan, AM 2665. This plan, together with the evidence from other pyramid temples, in which these magazines often follow strict rules of arrangement, enables us to reconstruct this area at Lisht with satisfactory accuracy. Only one major question can no longer be answered: the mode of access to the one or two westernmost magazines along the northern wall (see below and fig. 14).

On the basis of the general layout of the temple and the remains that can still be measured, it can be established that the chambers were 4 c. wide and 18 c. deep, and were separated by walls 2 c. wide. Each unit of five rooms was therefore 28 c. wide. The chambers opened, without doors, into a common corridor. The evidence from better preserved buildings<sup>162</sup> shows that they had an upper floor about 1.60 m. above the level of the pavement; it would scarcely have been possible to walk upright in them. Probably the upper floor could only be reached by means of wooden ladders.

### A. THE NORTHEAST GROUP

This group probably consisted of three chambers which were accessible from the room of the five niches. Nothing remains of these rooms but a foundation block that preserves the setting lines of the northeast corner of the last room on the west.

### B. THE NORTH GROUP

The existence of two more rooms adjoining the three of the northeast group is attested by traces of three partition walls projecting from the north wall of the temple, and by the setting lines for the two westernmost partition walls preserved on the last remaining pavement blocks. The existing traces are not sufficient to prove that the entrance of these rooms was as it is shown on our plans and suggested in proposal A in fig. 14. The possibility exists that the two rooms had no access from the offering hall, but were connected to the northeast group of magazines (fig. 14, proposals B and C).

### C. THE NORTHWEST GROUP

Five magazines would be expected to lie north of the offering hall along the east wall of the pyramid. Nothing is preserved but a single wall block, *in situ*, that marks the division between the second and third rooms from the north. In the temples of Sahura and Niuserra, the corresponding groups of chambers were provided with wash basins.<sup>163</sup>

### D. THE SOUTHEAST GROUP

Nothing survives from these five magazines but the remains of core blocks from a wall that separated the first and second rooms from the east.<sup>164</sup>

### E. THE SOUTHWEST GROUP

An area of pavement immediately west of the square ante-chamber preserves setting lines for the ends of the partition walls that prove the existence of the two northernmost rooms in this group of five. A photograph of these paving stones<sup>165</sup> shows that the surfaces covered by walls were comparatively clean, while the unprotected parts of the magazines and the corridor were blackened either by dirt or by soot. One must

<sup>162</sup> The best comparable examples are the magazines of Pepi I: see J. Leclant, *Orientalia* 46(1977)pl. 11; 48(1979) pls. 6-7; 51(1982) pl. 50; 52(1983) pl. 22.

<sup>163</sup> Borchardt, *Sahure* 29, plan 3/d; *Neuserre* plan 8/d.

<sup>164</sup> Visible on photo L 13-14, 1219, here pl. 21b.

<sup>165</sup> Photo L 28-29, 265. The width of the chambers is irregular, as in those of Niuserra (see Maragioglio, *Piramidi* VIII, 26).

ask if there was a fire similar to the conflagration in the magazines of Pepi I. Unfortunately this area of pavement no longer exists.

A few casing stones of the pyramid were excavated by the original Expedition just west of the southwest group of storerooms. These casing stones seem to indicate that the partition walls were built against the dressed casing blocks of the pyramid; these blocks were apparently not left rough in order to facilitate bonding with the walls of the magazines.

## 10. The Northern Wing

(fig. 15; pls. 21 d, 22, 85)

Sources: PHOTOS: L 8-9, 298; L 13-14, 1222.

PLANS: None beyond AM 2665 (1:100).

An L-shaped wing unites the north wall of the pillar court and the inner enclosure wall; it exactly matches a corresponding wing on the south side of the court (see page 51). Because the two wings share a common subfoundation with the court and the inner enclosure wall,<sup>166</sup> there can be no doubt that these wings were not later additions to the temple, but were instead planned from the beginning.<sup>167</sup>

The side wings represent, on a much smaller scale, the parts of the Old Kingdom mortuary temples that accommodated huge groups of magazines, sometimes as many as thirty rooms and corridors. At Lisht, the wings are so narrow (3.675 m.) that any lengthwise subdivision is unlikely. The possibility of crosswise subdivision is demonstrated by the existence of the brick chamber in the southern wing (page 51), but no traces of such divisions survive in the northern unit. A staircase to the temple roof could be expected in one of the wings, since such stairs were customarily placed in the front part of a temple.

The original Expedition was able to determine the location of the entrance to the northern wing with the help of setting lines on the pavement. Unfortunately, the critical block has since been removed, along with all the pavement blocks of the northern wing. An entrance at this point would be expected in any case, because comparable temples show the same arrangement.

Immediately north of this door, a short corridor leads into the northern branch of the wing. The original Expedition here excavated the pavement of a room that lay not on the level of the back part of the temple, but 1.20 m. below the level of the northern gate of the transverse corridor, and 1.34 m. below the pavement of the pillar court.

The pavement of this room consists of a series of slabs neatly fitted together and set directly on the level of the *gebel*, without any underlying foundations. The pavement is surrounded on all sides by the rough subfoundations of the walls that stand above ground, and does not continue under these subfoundations. It is therefore clear that this room does not belong to an earlier structure distinct from a later, overlying one; rather, the low pavement and the walls belong to the same phase of construction. The top of the pavement preserves many scratched setting lines, some of them corrected by a second line, which clearly outline a small chamber that once stood on these slabs. Traces of mortar along the setting lines and a dark discoloration of the areas not covered by walls, and hence exposed to abrasion by usage, show that the chamber was in fact built. The setting lines also show a small entrance corridor from the southwest

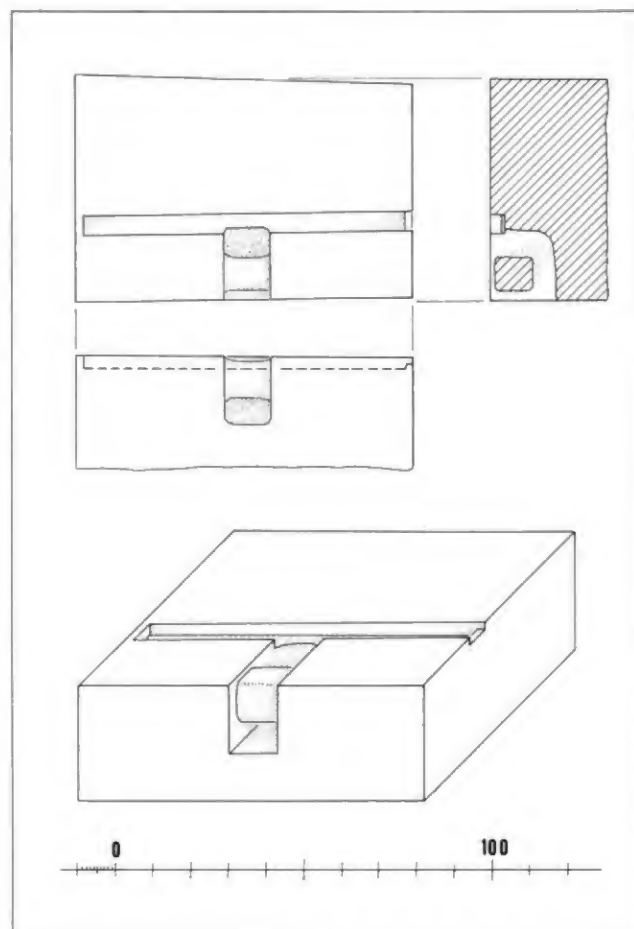


Fig. 15. Limestone block with moving devices. Scale 1:20. See n. 168.

into the chamber. The dimensions of the room are 1.85 m. (3.5 c.) east-west, and 2.115 m. (4 c.) north-south.

The shape and size of the room do not correspond to the room that can be reconstructed by following the outlines of the walls which surround this part of the temple on a higher level. The only explanation of this situation is that the chamber was a crypt, accessible by a short shaft from the floor of the upper level. This shaft would have been situated at the southern end of the short entrance corridor, and could perhaps have been closed with a stone slab measuring 0.60 x 0.92 m., and about 0.30 m. thick. It could have been lifted with a rope pulled through a handle in the stone. Lifting the stone would nevertheless have been a fatiguing task, as the weight of the stone might well have been over 400 kg.<sup>168</sup> As the crypt was small and the entrance tunnel only one meter high, the chamber would not have been used frequently—perhaps only once, to bury important objects. Since no other examples of crypts are known from mortuary temples, it is impossible to guess what kind of object this might have been.<sup>169</sup>

<sup>166</sup> We were able to check this at several points.

<sup>167</sup> The Expedition apparently thought that the wings were a later addition, see *BMMA* 21, March 1926, II, 38. It is strange, however, that the area of the outer court to the north and south of the two wings was found covered with rough limestone slabs, as if the front part of the temple had been prepared in accordance with the dimensions of the Old Kingdom examples: see plan AM 2679B (incorporated into foldouts I-II) and photo L 33-34, 395.

<sup>168</sup> A stone of this type was found by the original Expedition (Lisht Journal I, 67a-b) see here fig. 15. It is not known if the stone in fact belonged to the crypt, since it was found in the inner court west of the pyramid entrance. The top surface was exposed, while the side surfaces still carried bits of lime mortar. The groove had a layer of mortar bearing the impression of a square beam 5 cm. wide and at least 3 cm. deep.

<sup>169</sup> The closest parallel to it is the crypt in the temple of Buhen with a



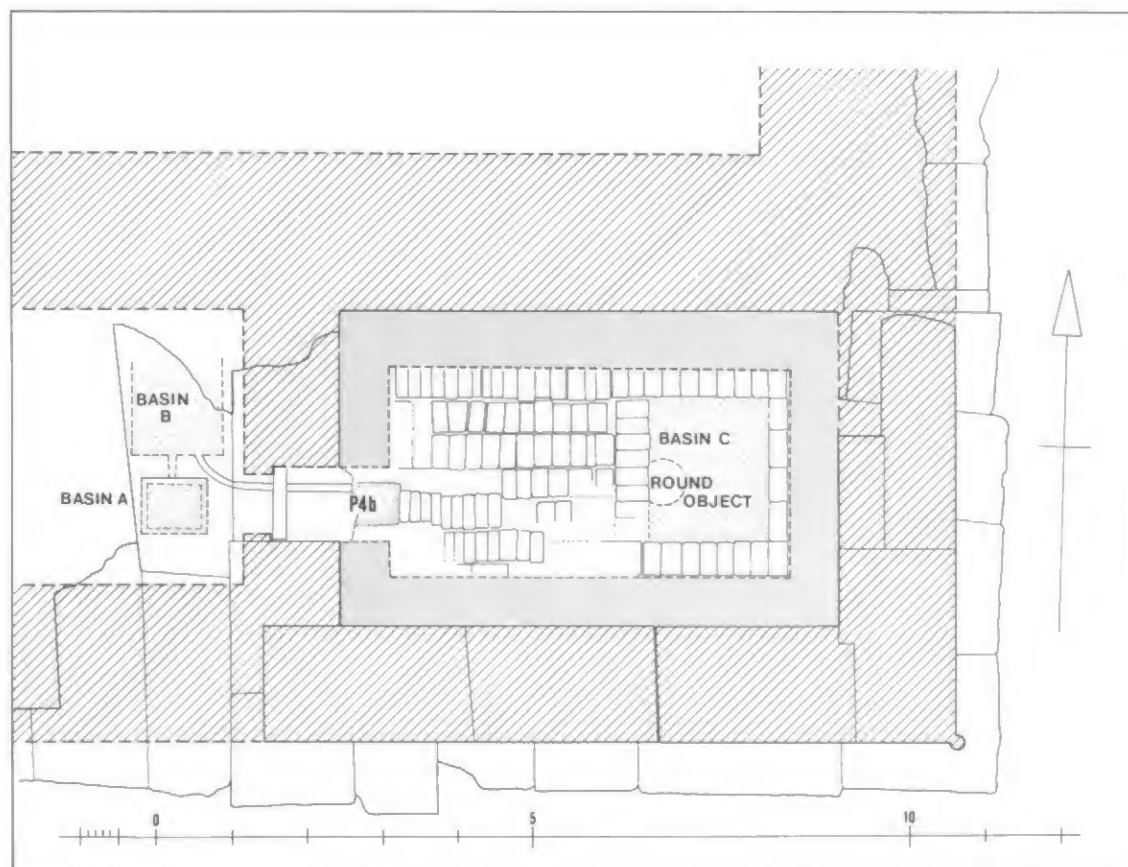


Fig. 16. Reconstructed and simplified plan of the brick chamber in the southeast corner of the mortuary temple. Scale 1:100. See pl. 86.

The main corridor of the northern wing runs eastward, ending in a room-like enlargement. Traces of this section of the northern wing could still be seen by the original Expedition and were included in their plan. Today, the relevant pavement slabs have disappeared.

## 11. The Southern Wing

(pls. 23–24, 86)

Sources: PHOTOS: L 8–9, 251, 275, 277, 280–282.

PLANS: AM 2665 (1:100).

The southern wing had exactly the same outline as the northern one, as can be seen from the existing southeast corner, the pavement stones drawn by the original Expedition, and the subfoundations we cleaned at its west end. There, the wing had a southern arm—now completely gone—but no crypt like that of the north wing. The main corridor running from west to east could have included a staircase to the roof of the temple, a feature which in some temples is placed behind the southeast corner of the court.

In the temple of Senwosret I, however, there is a different structure, the so-called brick chamber. Both Gautier's expedition and the early expedition of the Metropolitan Museum of Art excavated this brick structure built into the heavy stone masonry of the temple at its southeast corner. At first a well preserved feature, the brick chamber has suffered greatly in subsequent years, but could still be investigated in 1984. It shows clear evidence of changes in the course of construction that might have occurred in the following sequence:

A. During the construction of the temple, the east end of the

southern wing first received subfoundations of poor limestone, foundation and pavement blocks of good quality limestone, and finally heavy limestone walls built of blocks 3 c. thick, 2 c. high and 5 c. long. When first found, four blocks of the lowest course were still *in situ*; today, the westernmost has been removed. The blocks rest in a shallow bed in the top of the foundation blocks. A special extension was prepared for the corner torus: at the corner, setting lines were scratched in to indicate the exact placement of the corner block of the temple.

The east end of the corridor was separated from the rest by a crosswall which formed a chamber 4.20 by 6.60 m. The position of the entrance is indicated by the groove for the insertion of the door, later closed with stones. From the interior of the room, a curved channel for drainage led under the groove for the door and ended in a flat, rectangular basin.<sup>170</sup> This basin, about 1.20 by 1.20 m., drained in turn to the south into another basin about 0.75 by 0.88 m. and 0.34 m. deep.<sup>171</sup> This installation shows that a bath for some-

similar arrangement: a covered pit 0.68 x 1.00 m. wide led into a chamber under the floor 1.65 x 3.05 m. wide and 1.2 m. high. See Ricardo A. Caminos, *The New Kingdom Temples of Buhen*, II (London, 1974) 75, and a sketch in Ludwig Borchardt, *Ägyptische Tempel mit Umgang* (Cairo, 1938) 35, fig. 11. Another example might be the hidden chamber in the temple of Qasr el-Sagha: Dieter Arnold, *Der Tempel Qasr el-Sagha* (Mainz, 1979) 12–13. The decorated crypts of the Ptolemaic and Roman temples seem to belong to a different category.

<sup>170</sup> Unfortunately, the water-installation was not drawn by the Expedition and has since been destroyed. We could only reconstruct its appearance from photographs.

<sup>171</sup> Three similar basins were found sunk into the pavement of the northern inner court of the pyramid of Pepi II; see Jéquier, *Pepi II*, II 8, pl. 7; III pl. 29. In the court of the Ka-pyramid of Teti two pairs of basins were discovered; see C.M. Firth, *ASE* 29 (1929) 67; Lauer, *Téti* 40. Their purpose is unknown.



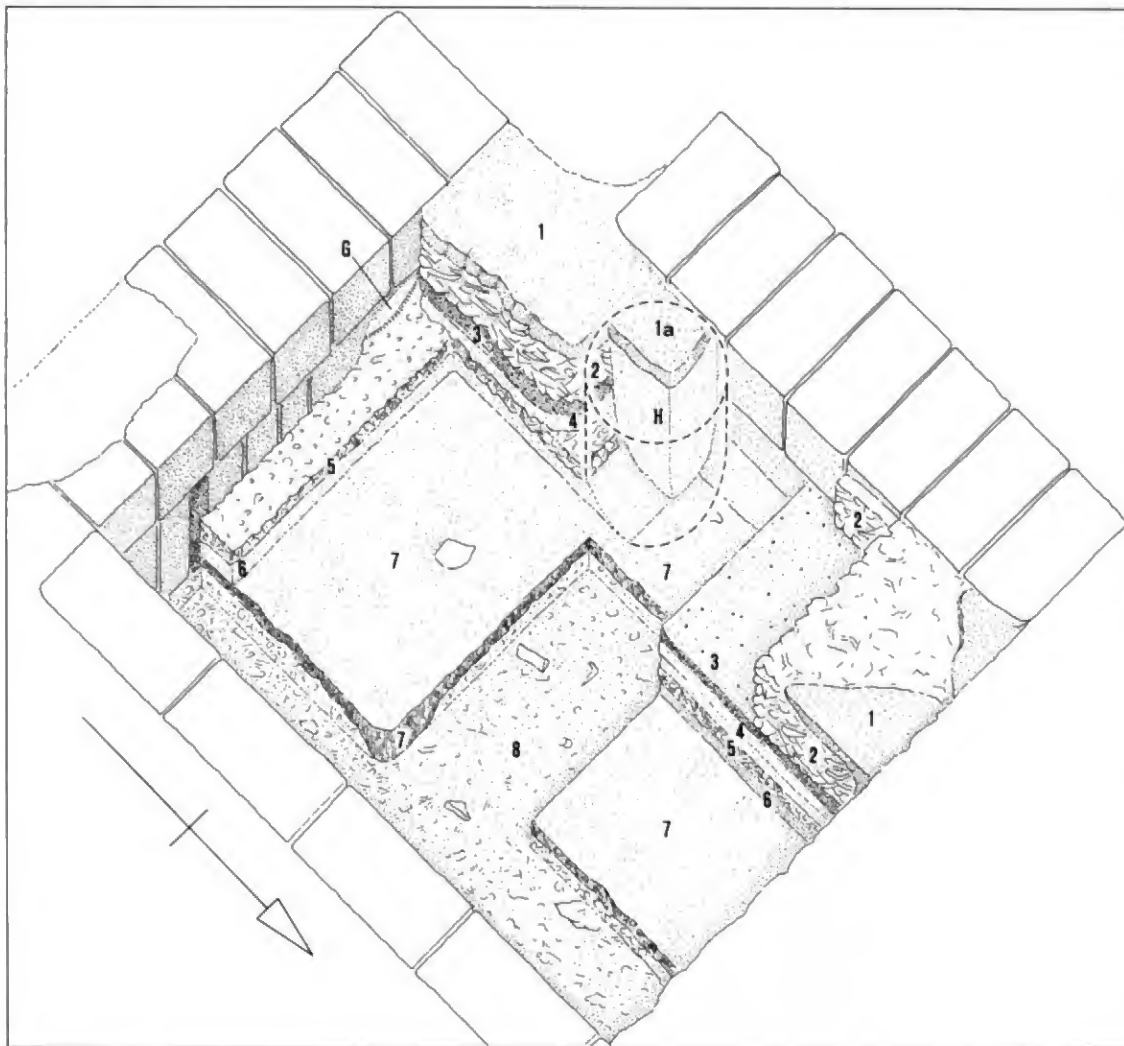


Fig. 17. Isometric view of layers in basin-like cavity of the brick chamber. Scale 1:20. See pl. 24b-c. 1: Thin layer of *moona* covering the fill of the cavity flush with the top of brick lining. 1a: Thin layer of *moona* covering the sand-filled hole for the round object. 2: Fill of limestone chips containing model pots, sherds, pieces of quartzite with verdigris (from sharpening tools?), charcoal, and fragmentary and complete mud stoppers. 3: Gray sandy layer. 4: Yellow sandy layer, similar in texture to 3. 5: Coherent, level floor of limestone chips and gypsum mortar, filling cavities of uneven surface of layer 6. 6: Loose, gray, sandy material with uneven surface. Potsherds. 7: Mixture of whitish and gray silt mortar with even upper and uneven lower end, spread to fill uneven surface of layer 8. Does not continue below bricks lining the "basin" cavity. Potsherds. 8: Mixture of coarse yellow sand and limestone chips which suggests a fill of builders' debris rather than natural desert surface. G: Gypsum adhering to brick lining above layer 5. H: Circular hole cutting into layers 2 to 6, filled with clean sand and covered by *moona* layer 1.

one or something was prepared just north of the entrance, with a covered drainage basin in front of it. The activities carried out in the room evidently necessitated purification before or after passing its door.

The curved drainage channel leading from the room is evidence that activities involving liquids also took place inside. The channel was cut into the stone pavement, but it may still belong to phase A of the room; its sealing off with a fill of limestone may have occurred in that phase or any of the subsequent stages.

- B. In the second phase, the stone floor of the interior of the room was removed and replaced by brick. The stone sub-foundations were left in place along the walls, and on them a brick wall about 0.65 m. thick was erected on all four sides, leaving a gap where the old stone entrance was still in place. Below the sill in the brick part of the entrance passage a pit roughly 1 c. square and 2 p. deep was left; it was filled with potsherds either then or later.

In the eastern part of the chamber, the builders prepared a large, rectangular pit (0.35 x 1.60 x 1.65 m.); the bricks

lining the south, west and north sides were arranged with their small ends toward the center, and those on the east were placed lengthwise. The floor of this cavity was smeared with a coat of gypsum and silt mortar which leveled the irregularities of the ground exposed after the floor slabs were removed (fig. 17, [8] and [7]). A layer of loose, sandy material [6] and one of hard gypsum reinforced with small limestone chips [5] followed. Into this carefully prepared cavity was inserted a huge but unknown object which was fixed with more gypsum mortar along all its sides [G]. This object would have measured about 1.60 by 1.95 m. and was no higher than 0.45 m., if it was made of one block (see below). It was apparently sunk 0.25 m. into the pit. That it was made of stone may be deduced from its having been fixed in hard mortar. The need to house the object and the activities carried out with it was certainly the reason for the unusual procedure of removing an existing stone floor and replacing it with the brick installation.

- C. Sometime later, the unknown (stone?) object was lifted from its place and moved out of the room without leaving

a fragment or damaging the door, which shows that the object cannot have been thicker than 0.45 m. (see above). The open pit was subsequently filled by a mixture of builders' debris [3], potsherds, and some complete model pots [2]. In this fill, at a point slightly south of the axis of the basin and more in line with the end of the curved groove on the door sill, a round hole about 0.50 m. in diameter and 0.35 m. deep was left open. Such a hole can only be explained as the impression of a round object inserted into the fill. The area around this object was covered with a mud floor [1]. The nature of the object is again unknown; it could have been anything from a stone to a large ceramic container.

D. After some time, the round object was removed. The hole it left was filled with clean, yellow sand [H], probably blown into the room by the wind. The room was still in use, however, for the surface of the sand filled hole was covered with a layer of mud [1a].

It is clear that the southern wing preserves traces of activities connected with the cult of the temple. It might be supposed that phases B through D were considerably later than the death of the king, but that is not the case. In the course of the recent campaigns, we found pottery dating to the reign of Senwosret I buried in the deposit under the doorway to the brick chamber and in the fill of the pit assigned to phase C. These discoveries show that the major transformation of phase B, and also the removal of the unknown object in phase C, occurred in the reign of the king or shortly thereafter.

One question regarding these proceedings is the identity of the first unknown object. It could have been a monolithic slab, perhaps in the shape of a water basin, or a series of blocks, or even a single block that formed the base for a statue or a shrine. The suggestion of a basin for purification is probably ruled out by the existence of another basin in front of the door to the chamber and the sealing of the drainage channel leading from the chamber into that basin.

Another question is the meaning of the use of bricks for the renovation of phase B. Had the existing chamber been desecrated or damaged? Or could the desired form of the room not be achieved in stone? It is possible that an irregular shape was desired, such as the *Pr-wr* of Upper Egypt or the *Pr-nw* of Lower Egypt.

The last major question is why the unknown object was not left in place, but was carefully removed. Was the object to be used again in another place? Or was it instead simply necessary to clear the room?

For the time being, these questions cannot be answered. We may instead draw attention to two kinds of artifacts the shapes of which may correspond with that of the unknown object. Stone tables with cornice-like edges are found in the magazines of several mortuary temples;<sup>172</sup> they are somewhat smaller, however, than the size indicated for the unknown object. Another possibility is the so-called lion bed found in other mortuary temples. Such a stone bench decorated with lion's-head protomes could have been used for the *sed* festival, or for the burial of the king or his queens, and removed later—either to be re-used or to be buried in a deposit.<sup>173</sup>

The possibility cannot be completely ruled out, however, that the room was not used as a sacred cult-chamber at all, but served some other purpose—for example, for the preparation of ointments, or the cleaning of implements and vessels used for the cult.<sup>174</sup>

## 12. The Drainage Installations of the Mortuary Temple

(pls. 25c, 26a-b, 58 a-b, 104)

Mortuary temples are usually supplied with two different kinds of drainage systems.<sup>175</sup> One was designed to carry out water used for purification and other rituals, mainly in the offering hall but also in other parts of the temple.<sup>176</sup> The only comparable system in the temple of Senwosret I would be the basins and drainage channel in and before the brick chamber in the southern wing (page 51). These installations, however, do not correspond exactly to the often very elaborate drainage systems of the temples of the Old Kingdom; they do not even lead out of the building.<sup>177</sup>

The second type of drainage system carries rainwater away from the temple roofs and the open court in the center of the temple. As no parts of this temple roof survive, one can only speculate about how its system may have functioned.

It may be assumed that at least three of the temple roofs were higher than the rest: the roofs of the *Pr-wrw*, of the square antechamber and the offering hall, and probably also that of the room of the five niches. Those equipped with a torus and a cavetto (certainly true of the *Pr-wrw*) would have had projecting channels, U-shaped in section, to carry the water down to the surrounding roof. The roof of the *Pr-wrw*, however, could have drained directly into the outer court of the pyramid using either simple channels or more elaborate lion's-head spouts.

The main temple roof—or, if the back part of the temple rose higher than the front, roofs—certainly did not drain into the central pillared court, but was instead drawn off into the inner and outer courts of the pyramid. The technical probability of this arrangement is confirmed by the excavation in 1909 of a huge limestone lion's-head spout "lying at level of pavement immediately east of foundation of enclosure wall, 9.50 m. from block with Nile figure [N 50] and 11.50 m. north of wall of colonnaded court"<sup>178</sup> (pl. 25 c). This head undoubtedly belonged to the drain(s) on the north side of the back of the temple. Its southern pendant may be represented by a left front paw in limestone, found with part of the side wall of a drain channel (pl. 25 d).<sup>179</sup> A drainage channel in the pavement of the

<sup>172</sup> Lauer, *Téti* 21, fig. 7; Jéquier, *Pepi II*, III 24, pl. 46.

<sup>173</sup> Auguste Mariette, *Les mastabas de l'ancien empire* (Paris, 1889) 86; Cecil M. Firth and James E. Quibell, *The Step Pyramid* (Cairo, 1935) pl. 56; Borchardt, *Sahure* 112–113, figs. 144–145; the latter was also found in the magazine south of the offering hall.

For further details and interpretation, see W. Kaiser, in: *BeiträgeBf* 12, 1971 103; *MDAIK* 39 (1983) 293–294.

<sup>174</sup> In the temple of Sahura, two chambers in the northwest group of magazines were equipped with washing basins and drainage installations: Borchardt, *Sahure* 76 and plan. These chambers may indeed have been used for such a purpose.

<sup>175</sup> A general study of these installations has not yet been undertaken.

<sup>176</sup> This type has been thoroughly studied by Borchardt in *Sahure* 75–83 and *Neuserre* 61; see also Maragioglio, *Piramidi* VII, 77–78; VIII, 34. More material has since been found.

<sup>177</sup> Some stones in the subfoundations of the east wall of the brick chamber are set in such a way that one could see the preparations made for a water outlet which was left unfinished and blocked up again.

<sup>178</sup> Findspot drawn on foldout II. Photos L 8–9, 296 and 301–303 show the head as found. See Hayes, *Scepter* I, 185, fig. 113. The head is MMA 09.180.530.

<sup>179</sup> Photos L 12–13, 403, 404. The legs were in the MMA [25.1.1] and were deaccessioned. As there are no records of the provenance, the piece might equally have been from the temple of Amenemhat I.

inner court of the pyramid led out into the outer court in front of the entrance of the Ka-pyramid enclosure (page 72). Strangely enough, no such system existed in the north, where the next outlet was drain H in the northern enclosure wall (page 86).

Water from the roofs surrounding the pillared court would certainly have been drained into the outer court of the pyramid, probably again by the means of lion's-head spouts.

Another lion's-head spout found near the entrance chapel of the pyramid (page 81) certainly belonged to that building. There, the spout was apparently placed level with the cornice, since the roof of the chapel ended only 0.12 m. below the top of the cornice. In the main temple, however, where it must be assumed that the side walls of the building with their cornices rose considerably above the roofs,<sup>180</sup> the spouts could not have been positioned at that height; instead, they were placed lower, at the level of the roof, and when seen from outside they appeared to emerge from the upper part of the side walls.

Both types, the lion's-head spout and the simpler channel with U-shaped section, are known from several examples in mortuary temples of the Old Kingdom from the Fifth Dynasty down to the Eleventh.<sup>181</sup> We may be sure that several more existed in the temple of Senwosret I, probably overlooked by the excavators and since removed. The number of drains reconstructed by Borchardt for the temple of Sahura,<sup>182</sup> however, seems to be exaggerated.

The pillared court of the temple of Senwosret I was also exposed to rainwater and for that reason it received a special drainage system. Between the third and fourth pillars on the north side, a drainage channel in the pavement (page 44) leads under the north wall of the court, under the floor of the northern wing, and finally through the wall into the outer court of the pyramid. The section of drain in the pillared court has suffered greatly since its excavation, but it is still visible. The section still preserved under the northern wing was re-excavated in 1984 (pls. 58a-b, 104). Its outlet into the outer court was found still blocked with potsherds (see vol. II) so that it could not have functioned. Our excavation in 1987 demonstrated that no drain pit existed in front of the outlet except a slight depression in the *gebel* surface.

### 13. The "Protodoric" Columns (pl. 25 a)

Sources: *BMMA* 2, July 1907, 116; 3, Sept. 1908, 171.  
PHOTOS: L 6-7, 444; L 12-13, 185, 188.


Gautier's expedition found several fragments of so-called "protodoric" columns near the upper end of the causeway of Senwosret I (see list below: a-c)<sup>183</sup> which gave them reason to reconstruct "une sorte de propylées ornées de colonnes." We know now that no such propylaeum ever existed and we have to seek another origin of these columns, or rather pillars.

The Expedition discovered more columns. One was in the area where the others had been found (see list: e) and, more surprisingly, in 1907 a second was discovered in the ruins of the mortuary temple of Amenemhat I (see list: d). The Expedition therefore suggested this temple as the origin of all these columns, probably only because the layout of the temple of Senwosret I seemed not to permit their incorporation. Since the majority of columns was certainly found near the temple

of Senwosret I, however, it would be more reasonable to look for a source in that area. The mortuary chapels of the queens' pyramids may be ruled out because they were inscribed with the names and titles of their owners,<sup>184</sup> while the columns with which we are concerned here show the title of the king. Unfortunately, no measurements or drawings of the columns were prepared.

The only remaining possibilities seem to be a large building complex discovered in 1987 southeast of the pyramid precinct or the unknown structure which left its traces east of the Ka-pyramid in the outer court (see p. 74).

#### LIST OF COLUMNS

- Licht* 16-17, fig. 9 left: upper end of a limestone(?) column with the abacus worked in the same piece. Twenty flutes and 22 edges. The space of two front flutes was shaped into a vertical panel with the royal titles, starting with . No dimensions given.
- Licht* 16-17, fig. 9, upper right: same but slightly larger. No dimensions given.
- Licht* 16-17, fig. 9, lower right: fragments of the shaft of a larger fluted column with an unknown number of flutes, apparently uninscribed. No dimensions given.
- MMA 09.180.525 (photo L 6-7, 444): upper end of a fluted limestone column with the abacus worked in the same piece. Only one half preserved, with a broad panel incised with the beginning of the royal Horus name. As photo L 6-7, 37 shows, this piece was found 1906/1907 in front of the mortuary temple of Amenemhat I.
- "Section of a Proto-Doric column in limestone"<sup>185</sup> found in the upper end of the causeway of Senwosret I close to the Osiride statue MMA 08.200.1. No photo or other record of this piece exists. It might have been identical with the one found by Gautier (c), because it was called "section."
- Photo L 12-13, 185 shows the fragment of a fluted column "from LSP." The width of the flutes seems to be 7.8 cm.
- Photo L 12-13, 188 (here pl. 25 a) shows the fragment of a fluted column shaft. The fragment was 0.66 m. high. The width of the flutes was 6.6 cm. The caption of the photo gives the findspot as Lisht South Pyramid.

### 14. The Exterior Walls and the Roof of the Temple (pl. 105)

Sources: Tomb cards 94, 97.  
PHOTOS: L 13-14, 1205.  
DRAWING: AM 2668.

In order to determine the batter of the walls, it is sufficient to quote tomb card 97: "The batter of these walls is so slight as to be hardly noticeable, and as only one course of stone is preserved it is hard to determine the batter with exactitude.

<sup>180</sup> See, for example, Borchardt's reconstruction of the roofs of the temple of Sahura in *Sahure* Blatt 4-5, 8.

<sup>181</sup> Further examples quoted in *BMMA* 29, Nov. 1934, II, 16 n. 36; Lauer, *Ounas* 45. See also Arnold, *Mentuhotep* 58 fig. 36.

<sup>182</sup> See his plaster model of *Sahure* Blatt 4-5, where the temple is provided with 26 spouts.

<sup>183</sup> *Licht* 16-19 fig. 9.

<sup>184</sup> Tomb card 385 and unpublished drawing AM 2684.

<sup>185</sup> *BMMA* 3, Sept. 1908, 171.

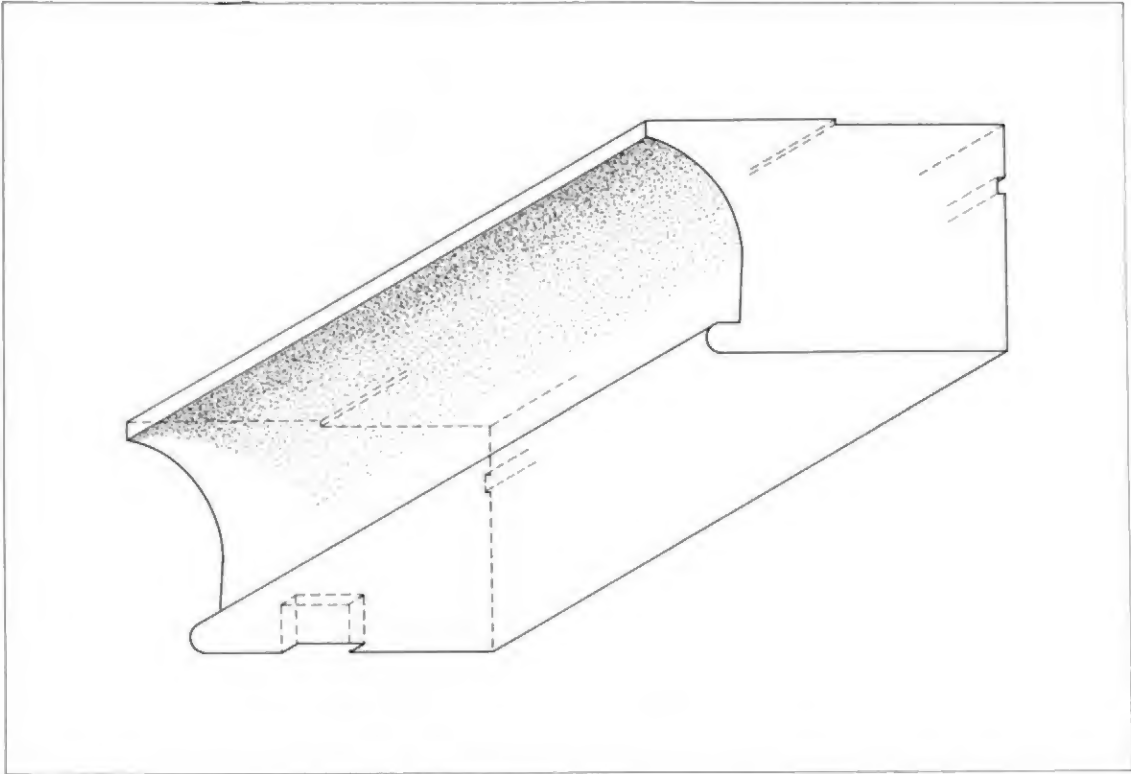


Fig. 18. Isometric reconstruction of a cavetto block of the mortuary temple. Scale 1:25. See pl. 17f.

Several trials were made at the best preserved points. The results were:

1 in 130      1 in 140      1 in 160

It must be noted that a difference of half a millimeter in the horizontal measurement is enough to make a difference of ten in the second part of the ratio so that what the intended batter was can only be guessed; perhaps 1 in 150.”

The exterior walls of the temple were certainly surmounted by a torus and cornice. Unfortunately only one block of cornice was documented, and it may not represent the average size, but the especially high cornice of the *Pr-wrw* (fig. 18; pl. 17f). This complete cornice measured 0.77 m. in height; it was 0.89 m. thick at the base (excluding the torus) and 1.19 m. wide at the top, so that the cornice projected about 0.30 m. from the wall.

The reconstruction of the heights of the various parts of the building to ceiling and roof level is a problem common to all mortuary temples and cannot be solved here, where few indi-

cations of these heights exist. The only contributions to the question are the measurement of the height of the step between the front and the back part of the temple (0.75 m. or 10 p.), and the vague possibility of estimating the height of the square antechamber with the help of the diameter of the column shaft as 7.08 to 7.98 m. The system of heights worked out for the reconstruction shown on pl. 105 is therefore no more than a proposal of possible measurements, with a tendency to reduce all heights to the minimum required.

Some uncertain points in the reconstruction should not be overlooked. One is the possibility that the height of the rooms in the rear part of the temple was the same as in the front part. Since the rear part stood on a podium 0.75 m. high, the roof level of this part of the temple would have been correspondingly higher, and the transition marked by a step in the roof running north-south along the west wall of the transverse corridor.

The second point is the height of the parapet wall surround-

COMPARATIVE LIST OF CEILING HEIGHTS IN THE MAJOR ROOMS OF MORTUARY TEMPLES

King	Causeway	Pr-wrw Wall	Vault	Court	Transverse Corridor	Vestibule	Square Antechamber	Hall of Offerings Wall	Vault
Sahura	7 c. 5 p. or 8 c. 5 p.?	—	—	14 c.	10 c.	—	—	—	—
Niuserra	10 c.	—	—	12 c.	10 c.	—	12 c.	—	—
Unis	6 c. or 7 c. 3 p.	—	—	13.5 c.	11 c.	—	13.5 c.	11 c.	[2 c.]
Teti*	—	[11 c.]	—	[10 c.]	[10 c.]	[8 c.]	[13 c.]	[13 c.]	[2 c.]
Pepi I**	—	—	—	—	—	—	—	—	—
Pepi II	6 c.	11 c.	[2 c.]	—	9 c.	9 c.	13 c.	12 c.	[2 c.]
Senwosret I	[6 c.]	[11 c.	2 c.]	[10 c. 5 p.]	[10 c.]	—	13.5 c. to 15 c.	[12 c.]	[2 c.]

\* According to J.-Ph. Lauer’s reconstruction, which seems to be based on the material available for the complex of Pepi II

\*\* Not yet published.

[ ] Theoretical calculations only.

ing the roofs of the temple. The well known plaster model of the Sahura precinct shows such a wall, running from the roof level of the *Pr-wrw* right to the pyramid.<sup>186</sup> Such a high wall would have given the temple quite an impressive appearance. In our reconstruction, this parapet consists of a cavetto which brings the total height only to 6.30 m. (12 c.).

The third point is the upper west wall of the *Pr-wrw* and the upper east wall of the offering hall. In Lauer's reconstruction, the centers of these walls are set back in order to shorten the window channels which light the *Pr-wrw* and the offering hall. The result is a recess articulated by an elaborate entablature. Since no traces of such a construction exist, our reconstruction rejects Lauer's conception in favor of a simpler solution—but one with longer window channels.

Finally, we do not know how all the towering roofs of the *Pr-wrw*, the square antechamber, and the offering hall were enclosed. This might have been achieved by a cavetto cornice, as is shown in our reconstruction on pl. 105. There might, however, have been a rounded edge or merely a simple, undecorated ledge edging each roof, especially since these parts of the temple could only be seen from a considerable distance.

## 15. The Seated Figures of Senwosret I (pl. 26 c-e, 82)

Bibliography: *Licht* 30–38, figs. 23–27, pls. 9–13; Gautier, *Fouilles de Licht* 15–17, figs. 13–15; L. Borchardt, *Statuen und Statuetten von Königen und Privatleuten* (CG 1; Berlin, 1925) II, nos. 411–420. Mohamed Saleh and Hourig Sourouzian, *The Egyptian Museum Cairo* (Mainz, 1987) no. 87.

On December 21, 1884 Gautier's expedition discovered the now-famous group of ten seated limestone statues of Senwosret I. They had been carefully buried side by side in the sheltered area between the northern extension of the north wing of the temple and the southern enclosure wall of pyramid 8.<sup>187</sup> To judge from the photographs, the find lay not much above the flattened *gebel* surface and not very deep beneath the surface of the court.

The statues showed no signs of weathering, and the little damage visible may have happened during their transportation and burial. Traces of mud (or mud brick?) at their bases are unexplained. Some statues lacked the final touch of the sculptor, and some important details have been rendered only in paint. These statues have nothing to do directly with the excavations of the Metropolitan Museum of Art and cannot therefore be dealt with in detail; their discovery does, however, raise questions of importance for the history of the temple.

The first consideration is the date of the burial of the statues. The general opinion is that the statues were originally placed under the ambulatory of the pillared court<sup>188</sup> and were hastily removed by priests in order to protect them from desecration by the Hyksos. Several points, however, contradict this theory. First, it seems impossible that the statues would have preserved their fresh appearance if they had been standing in the court for three centuries. Furthermore, no traces of the setting of the statues are preserved in the pavement, and we know from the Osiride statues in the causeway (page 19) that statues were not placed on the surface of the pavement, but sunk into it. Finally, since there was no communication between the pillared court

and the place where the statues were buried, one would have to assume against all probability that the north wall of the court was already destroyed in the Thirteenth Dynasty so that the statues could be moved out through a gap. The conclusion that necessarily follows these observations is that the statues had not yet reached their intended destination and had never been set up in the temple. The questions now, of course, are what their original destination was and why they did not reach it. Unfortunately, we do not know the sculptural program of the mortuary temple well enough to answer these questions. The pillared court could still be considered their intended site, if one assumes that the holes for the statues had not yet been dug in the pavement. The *Pr-wrw*, the transverse corridor and the wings also could have accommodated ten figures with bases measuring about 0.57 x 1.23 m. A less probable destination would have been the room of the five niches, where, however, *standing* figures would be expected and where in any event there was room for only five. The square antechamber would have been much too crowded by the ten statues, and the offering hall would probably not have contained more than one figure of the king. Finally, the magazines around the main rooms would have been ideal to accommodate two groups of five statues each, if their ceilings were not too low.<sup>189</sup>

The only part of the temple with sufficient space for the statues and where a substantial change in the construction took place was the causeway. It is not impossible that the statues were intended for the first phase but were replaced in the second phase by the Osiride statues. During the renovations the walls of the causeway may have been opened at several places, so that it would not have been difficult to move the seated figures out to the north, drag them in front of the cabin (pl. 75), through the north gate of the outer enclosure wall, and into the outer court of the pyramid. One wonders, however, why the statues were temporarily stored in a place from which it would have been difficult to remove them to another destination after the temple and court walls had been rebuilt.

## 16. The Prototype of the Mortuary Temple of Senwosret I

After the end of the Sixth Dynasty, no royal mortuary temple was built in the old tradition, set by the mortuary temple of Sahura. As far as we know now the mortuary temple of Amenemhat I at Lisht was so small that it could not have contained all the necessary rooms of these structures, and was an abbreviated version of the old type.<sup>190</sup> Senwosret I was the first

<sup>186</sup> Borchardt, *Sahure* Blatt 4–5. Copies of this model existed in several museums; one is still displayed in the Egyptian Museum, Cairo.

<sup>187</sup> This wall and pyramid 8 may have been built so much later that they did not yet exist at that time.

<sup>188</sup> For example, Ricke, *Bemerkungen AR* II, 52 and John Baines, *Fecundity Figures* (Warminster, 1985) 134, 155.

<sup>189</sup> The decoration of the sides of the thrones seems to suggest a division of two groups of statues, one with the Horus and Seth motif and the second with fecundity figures (see also Mohamed Saleh and Hourig Stadelmann, *Die Hauptwerke im Ägyptischen Museum Kairo* (Mainz 1986) no. 87). J. Baines (o.c.) points out, that the distribution of the motifs of the upper Egyptian lily and the lower Egyptian papyrus would fit an arrangement of the statues in two opposite rows one facing north and the other south. There are discrepancies in the decoration program, however, which could indicate that the distribution of the statues was not this simple.

<sup>190</sup> See the preliminary plan of the site: *BMMA* 17, Dec. 1922, II, fig. 1.

king of the Middle Kingdom to take up the tradition again and build a temple which, without the evidence of the inscriptions, could be dated to the Sixth Dynasty. This close relationship to the older type suggests that the architects of Senwosret I either had access to construction plans of that period or, more plausibly, that they studied and measured the extant buildings themselves.

This procedure, common in ancient Egypt, did not lead to a slavish copying of older buildings. The architects of Senwosret I introduced several important changes in their building program to accommodate new developments in the mortuary cult and in the conception of the royal afterlife. These alterations included the introduction of Osiride statues of the king in the causeway,<sup>191</sup> the reduction of storerooms in the front part of the temple, and their transformation into the northern and southern wings with the crypt and “brick chamber”—elements that have no prototypes in the Old Kingdom.

Two important questions are which of the older temples could have been used as a model, and which shows the closest relationship to Senwosret I. As we know little about the above-ground structure of the temple of Senwosret I and about the decorative program of its walls, we can only work from proportions of the ground plan. In considering possible models, we shall exclude the temples of Sahura, Niuserra, and Neferirkara, and also to some extent that of Djedkara-Isesi, all of which show too many individual peculiarities, as well as the mortuary temple of Merenra about which nothing is now known, and concentrate instead on the temples of Unis, Teti, Pepi I, and Pepi II.

The results of comparing these temples are shown in the following list. It indicates that there are no corresponding measurements in the temple of Djedkara-Isesi, and only a few in that of Unis. The closest connection appears to be with the temples of Teti and Pepi I, while that of Pepi II has some deviations caused by local conditions. There is no indication, however, that any single temple of this group served as the actual

prototype. All more or less follow the same common proportional system, and one might ask if a master plan had been developed under king Teti which was adopted by the less creative architects of his successors. We know that the office of the royal master builder was in the hands of one family for four generations from Djedkara-Isesi to Pepi II,<sup>192</sup> a situation which certainly favored the formation of strict building rules. A copy of these rules might still have existed three hundred years later, to be used by the builders of Senwosret I, since the use of written records was an essential part of Egyptian culture. It is also possible that the architects’ studies might have included “fieldwork” at surviving temples of the Old Kingdom. Some of these buildings might even still have been functioning<sup>193</sup> and accessible to architects and scholars who could be considered early representatives of archaeology.<sup>194</sup> Others might have been destroyed already, but nevertheless have been used for such studies.<sup>195</sup>

More information about the extent of copying can be expected to emerge as we study the decorative program of the temple of Senwosret I; this in itself might establish other connections to the pyramid temples of the Old Kingdom.

<sup>191</sup> The idea was not completely new, as we know from the causeway of king Mentuhotep at Deir el-Bahari. See p. 20.  
<sup>192</sup> G. A. Reisner, *ASAE* 13 (1914) 249.  
<sup>193</sup> The temple of Pepi II was still adorned with statues (PM III<sup>2</sup>, 429).  
<sup>194</sup> The search for plans of sacred ancient architectural types is also known from ancient China. See Nancy Schatzman Steinhardt, *Chinese Traditional Architecture* (New York, 1984) 70–77.  
<sup>195</sup> In the same way as Unis had apparently used building materials from the temple of Djedkara-Isesi (Lauer, *Ounas* 125–128), blocks of his own temple were built into the funerary complex of Amenemhat I at Lisht (Goedicke, *Re-Used Blocks* nos. 31–42, 44, 49–52, 55; Lauer, *Ounas* 124–125). Other temples might have survived longer: that of Sahura was only destroyed in Roman times (Borchardt, *Sahure* 106–107, 155). That of Niuserra was dismantled in the Ramesside Period (Borchardt, *Neuserre* 159–161).

COMPARATIVE LIST OF PROPORTIONS OF PYRAMID TEMPLES  
Numbers in parentheses are assumptions based on general lay-out of temple

Kings	Pr-wrw		Court		Back Temple		Sanctuary		Number of Magazines				
	Width	Length	Width	Length	Width	Length	Width	Length	NE	N	NW	SW	SE
Djedkara	10	41	30	49	79	61	10	34	3–4	3	4	4	1–2
Unis	10	37	25	42	75	55 (56)	9	(26)	3	2	4	5	—
Teti	10	40	30	45	86	64 (66)	10	30	4	2	5	5	5
Pepi I	10	(40)	31	47	86	65	10	30	4	2	5	5	5
Pepi II	10	38	30	46	85	63 (66)	10	30	4	2	5	5 (4+1)	5
Senwosret I	10	40	37	45	86	65	10	(30)	3	2	5	5	5



## CHAPTER V

### The Inner Court and Inner Enclosure Wall

(figs. 19–22; pls. 27–37, 87–88, 94)

Sources: *BMMA* 3, Sept. 1908, 172, figs. 2, 4; 19, Dec. 1924, II, 38–39, figs. 3–7; 28, April 1933, II, 4, figs. 1–3.  
PHOTOS: L 7–8, 311, 534; L 13–14, 1204; L 31–32, 56–59, 66, 68, 168, 247; L 33–34, 204; 18 L 10.  
PHOTOS of decorated panels: see pp. 62–63.  
PLANS: overall plans AM 2617–2621 (1:200) and AM 2671 (1:100).

The inner court and its surrounding enclosure wall are both constructed in stone; together with the pyramid, they form the centerpiece of the funerary complex. This core of stone masonry was erected on the surface of the desert conglomerate, which drops slightly from west to east. In order to establish level foundations the builders had to sink the blocks about one meter into the *gebel* at the northwest corner of the court while correspondingly building up the southeast in masonry. In addition, in the center of the square, a less pronounced cavity was dug into the *gebel* surface for the foundations of the pyramid (see page 65). Finally, the areas of both the foundations of the pyramid and of the inner court were walled with stone in a way that makes it difficult to determine whether the foundations of the pyramid and those of the court are a single continuous unit of masonry or not. In some places the pyramid foundations can be clearly distinguished from the foundations of the court (pl. 94 D). In other places (pl. 94 B), the subfoundations protrude so much into the court area that they are linked with the court foundations. In general it can be stated that the pyramid foundations differ in depth and structure from the court foundations. The court foundations consist of a subfoundation of large and irregularly shaped slabs of local limestone, set with rather large joints so that the quarry marks along their sides are still legible. The surface of these slabs, however, was carefully leveled. In some places (see pl. 28c) this leveling was achieved by another layer of rather small and irregular slabs, which carried the pavement of the court and the foundation blocks of the enclosure wall. The pavement slabs have tight joints and surround the pyramid predominantly as stretchers; most are rectangular but some are trapezoidal. Work was started at the foot of the pyramid with slabs frequently only 10–25 cm. thick. They rest on the steplike projecting foundation blocks of the pyramid (pl. 94L); in some places they even cover the lowest part of the sloping pyramid casing. The size of the pavement slabs increases with the distance from the pyramid. The largest and thickest ones make up the foundation for the enclosure wall, and are arranged as headers. In some cases the upper surface of these blocks was dressed only along the outer foot of the enclosure wall leaving a rough raised surface on top

covered by the core of the wall. Unfortunately, the surface of the pavement—once perfectly level and smooth—is now so eroded that it is impossible to establish whether there was a slight slope from the foot of the pyramid outwards in order to direct the rainwater against the enclosure walls and into the drainage channels. Even the foundation blocks of the pyramid and the paving blocks of the court have settled so much that it is difficult to calculate the level originally intended for the foot of the pyramid and the surrounding court.<sup>196</sup>

The inner court is 20 c. (10.50 m.) wide in the west, north, and south. In the east, where it encloses the Ka-pyramid and the back part of the pyramid temple, it measures 65 c. (34.125 m.). Except for the main pyramid, the Ka-pyramid, the back portion of the mortuary temple, and the entrance chapel, no other monument existed in this sealed-off area and no tomb shafts were ever dug into it.

When Gautier's expedition started its work, the entire area around the pyramid was covered with mounds of debris produced by quarrying of the pyramid casing and the consequent crumbling of the masonry of the core. In view of the amount of this debris, Gautier contented himself with clearing the area around the entrance into the pyramid and that opposite it in the south court. There, in front of a robbers' tunnel, he found the debris piled up by the robbers on the paving of the court.<sup>197</sup> He remarked that this debris still preserved a sequence of layers, with those from the interior of the *gebel* (limestone) probably on top. This debris also preserved at its southern edge the vertical impression of the enclosure wall, which had not yet been eroded by the wind. He rightly suggested that the debris must therefore have been accumulated when the wall was still intact, and that the excavation work of the robbers must have taken place soon after the complex went out of use since wind-erosion would not have taken much time. He therefore dated the robbers' activities to the Hyksos period.

The Expedition undertook the heavy task of clearing most of the inner court of the pyramid, starting from the pyramid temple and proceeding to the south and along the west side of the pyramid to the northwest corner, and around to the pyramid entrance. Only the south side of the court and its northeast corner 25–30 m. from the corner in both directions have never been excavated.<sup>198</sup>

The Expedition discovered that the inner enclosure wall had been completely quarried away in the east, north, and northwest, but that one or two courses of it were left standing along the south side and in the west—areas that were probably covered in a short time by the debris sliding down from the pyramid when it was being quarried. The stone robbers did not make much use of the rounded coping stones of the wall, so a large

<sup>196</sup> There are deviations between –0.10 and –0.24 m. NN.

<sup>197</sup> *Licht* 13–14, fig. 7.

<sup>198</sup> The main work of the Expedition was done in seasons X, XII, and XIV; see page 150.



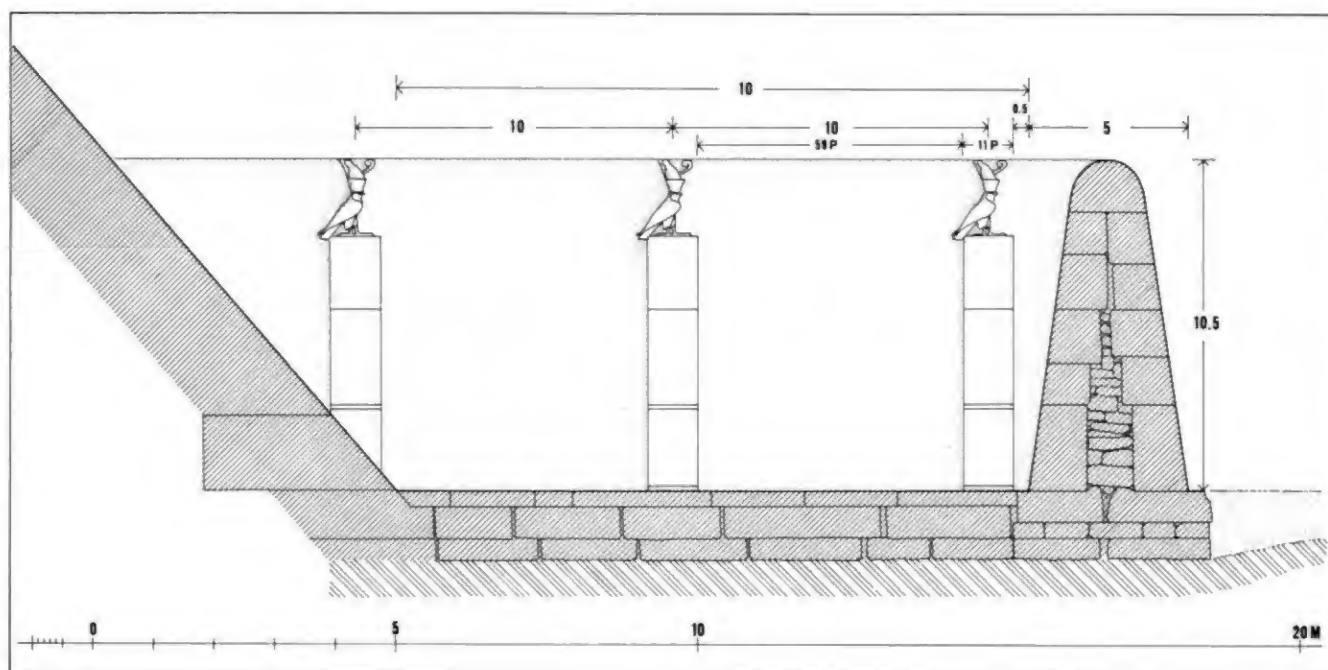


Fig. 19. Reconstructed section through casing of pyramid, inner court and enclosure wall with measurements in cubits. Scale 1:125.

quantity of this material was found in the debris when the Expedition undertook its excavation; most of these blocks have, however, since disappeared. But the remains still enable us to form a clear idea about the construction, dimensions and decoration of the wall.

The wall is 5 c. (2.625 m.) thick; its lowest course is formed by two rows of upright standing slabs containing a fill of *dabsh*. The inclination of the walls that can still be measured is  $82^{\circ}25'$  in the west and  $82^{\circ}21'$  in the south, which indicates an ancient measure of 1 p. inclination in 1 c. height, or  $81^{\circ}52'$ .<sup>199</sup> The top of this lowest course is very often stepped to form the foot of the following courses; its surface still preserves setting lines and pry-holes for them. These holes were sealed after use with plaster and limestone chips. Some, but not all blocks were clamped together.<sup>200</sup> The upper part of the wall, up to the coping stone, consisted of four or five less systematically arranged courses of smaller blocks which were probably set as bond-stones. The saddle-backed coping stone was a single piece, binding together the smaller blocks below it; several examples were found more or less complete, and the one in best condition, from the center of the south wall, preserved parts of its decoration (fig. 21, pl. 35 e-f).

The significance of the wall lies in its decoration, because no other enclosure wall of this type is known from a royal pyramid precinct. Both the inner and outer surfaces of the wall carried high, narrow decorated panels at intervals of 5 m. They projected 2 cm. from the surface and were crowned by the figure of the Horus falcon in very high relief. The panels were divided into three sections. The lowest shows an approximately life-size fecundity figure carrying offerings.<sup>201</sup> He appears corpulent, and wears a long beard and long hair of which the individual locks are not always differentiated. He holds an offering mat with bread, and two jugs from which streams the water of life, with a huge *w3s*-sign in the middle. The rather soft limestone has been badly damaged by wind, and nearly all the figures are destroyed. Only three are better preserved: one in the Egyptian Museum, Cairo (pl. 30a); one upper half still *in situ* in the west wall (S 4, pl. 30 b); and another upper half re-excavated in 1985 (S 23, pl. 30 c-d).

Gautier had already noticed that the sections of wall above

the panels with the fecundity figure show several variations of the so-called palace façade motif. The only complete example could not be moved, as it was still *in situ*.<sup>202</sup> Thus, neither the Egyptian Museum in Cairo nor the Metropolitan Museum of Art possesses a complete example of this palace façade decoration, and both museums combine fragments of different versions. The origin of this traditional motif is the archaic palace façade, which shows a gateway recessed between two tower-like projections. The towers are divided into 5 projections and 4 recesses. The upper part of the towers, which projects over the walls, is divided horizontally into a varying number of registers. Here at Lisht, the doors are depicted rather naturalistically, with hinges, transverse ledges, and bolts. Above them is a richly decorated window, an architrave in three registers, and finally the façade of the palace wall, again consisting of five projections and four recesses. The upper parts of the towers are connected by a series of four architecturally unnecessary horizontal elements. The second from the top contains the *was*-sign and the one below, a mat motif. At the top, the whole design is enclosed by two horizontal stripes, the upper one apparently depicting a cornice. This basic pattern is common to all known examples of our panels. The decoration of the single elements may, however, change considerably from one panel to the next. All the details have been carried out with painstaking precision in very shallow relief that would scarcely have been visible in the vast extent of wall and in comparison with the much bolder relief of the fecundity figures and the decoration of the upper parts of the panels. No traces of color

<sup>199</sup> The usual batter of the outside walls was  $82^{\circ}$ ; see Maragioglio, *Piramidi* VII, 72 (Niuserra); VIII, 30 (Sahura).

<sup>200</sup> The Expedition found still-intact wooden cramps connecting the second, third and fourth blocks south of the center of the west wall (inside). For details, see the second volume of this publication.

<sup>201</sup> John Baines, *Fecundity Figures* (Warminster, 1985), does not include this series of fecundity figures in his studies. They should, however, be seen in connection with the decoration of the thrones of the ten seated figures of Senwosret I (*Licht*, figs. 28–32) and the granite altar from the pillared court (*Licht*, figs. 17–20) which feature similar motifs as parts of one and the same decorative program.

<sup>202</sup> *Licht* 12, fig. 4; probably identical with that on photo L 7–8, 535 (BMMA 3, Sept. 1908, 172, fig. 4).

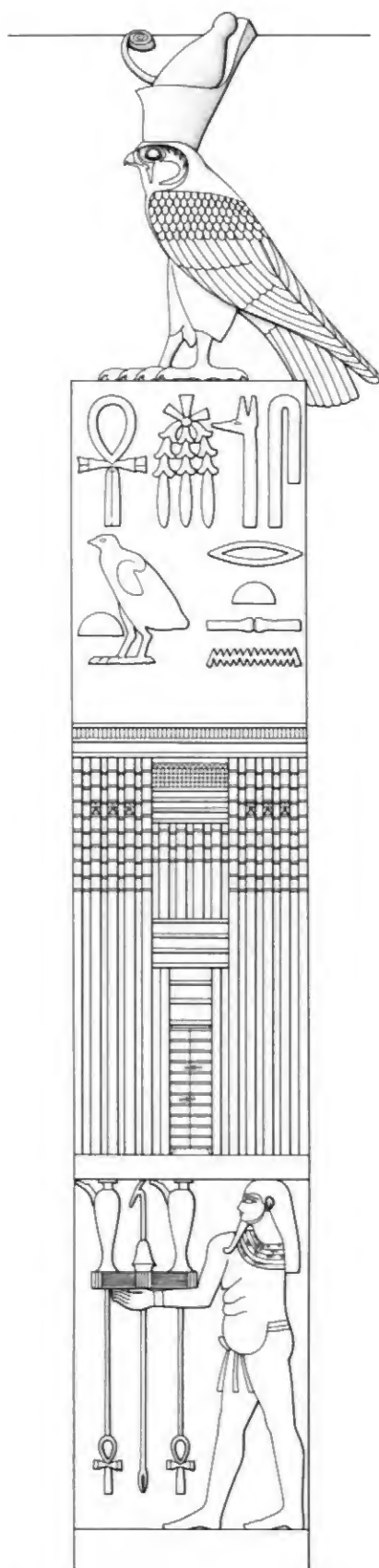


Fig. 20. Reconstruction of a hawk panel of the inner enclosure wall of the pyramid. Scale 1:25.

have been noticed, but one would expect that the small scale panels were made more conspicuous by paint.

The next section, above the panels with the palace façade motif, presents the royal names in rather large and heavy hieroglyphs. It not only shows the Horus name of the king, *'nh-mswt*, as one would expect, but also alternately his prenomen *S.n-wsr.t* and his nomen Kheperkara. The fact that both combinations—Horus name with nomen and Horus name with prenomen—occur written in two directions gives a clue to the distribution of the panels (see below).

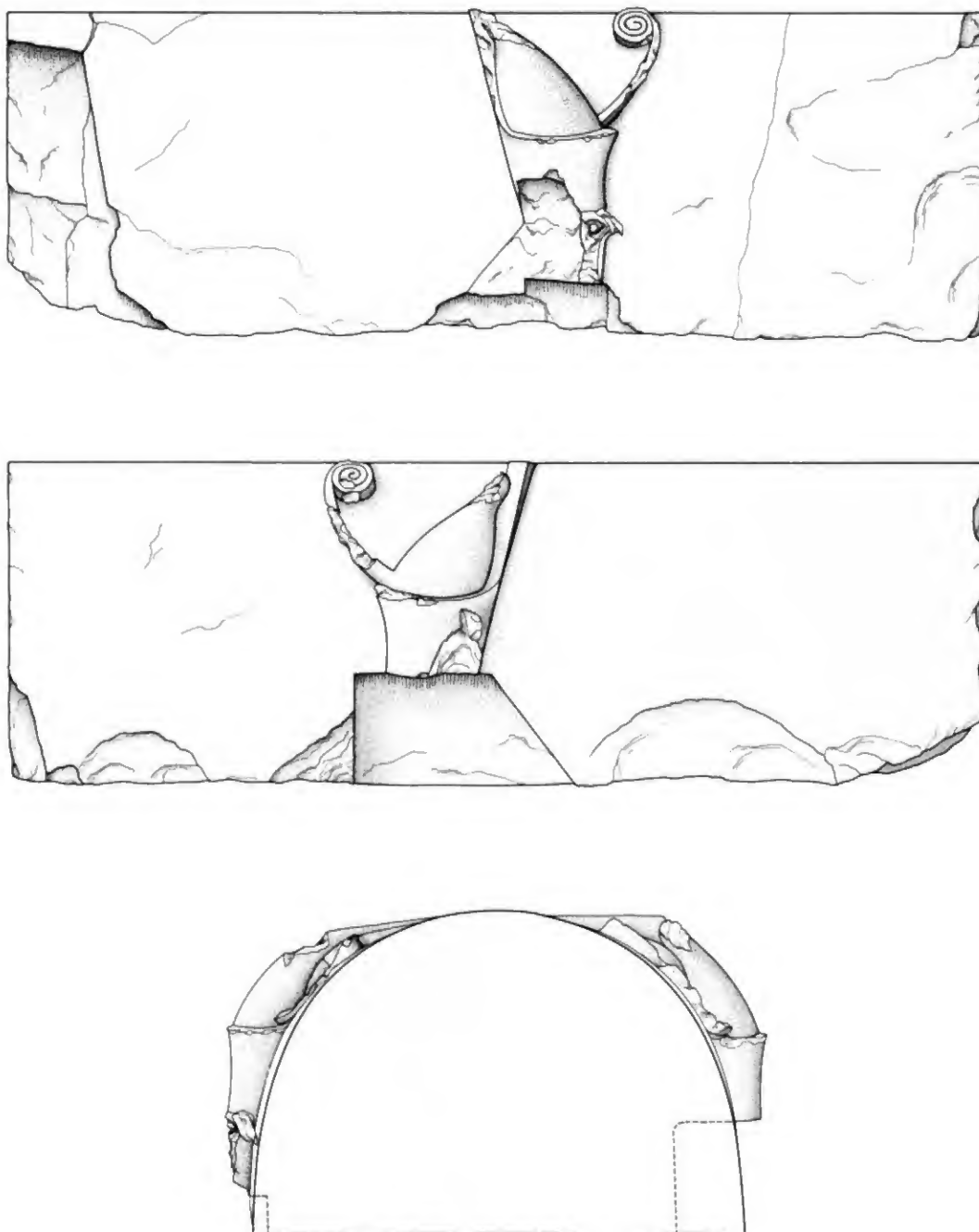


Fig. 21. Example of saddle-backed coping of the inner enclosure wall, end and two side views. Scale 1:20. See pl. 28b, 35e–f.

On top of each panel stands the royal Horus falcon with the double crown. The surface of the wall starts to curve at the level of the middle of the bird so that the upper part of the figure is carved nearly in the round. Since each panel was placed to correspond with one on the opposite face of the wall, the spirals and tips of the crowns nearly meet at its apex, and were connected by a ledge of stone (pl. 35f).

All details of the birds, including their feathers and the scales on their legs, are precisely cut. The general appearance of the birds shows, however, that not all the artists were able to produce the same quality of work. Many parts of the falcons have survived, for the stone robbers often cut them off or left the entire block because of their undesirable shape.

The remaining low sections of the panels, together with fragments of the upper parts and especially the preserved coping stones, permit an exact reconstruction of the distribution and the decorative program of the panels. Fortunately the starting point of the entire system is still preserved in the center of the west wall.<sup>203</sup> There, the two panels are not separated by the

<sup>203</sup> *BMMA* 28, April 1933, II, 4; photo L 31–32, 256, here pl. 31c.

usual distance of 4.425 m. (see below), but are only 0.50 m. apart. Coincidentally, fragments of the upper part of these two panels also survived.<sup>204</sup> The fecundity figures on these panels are placed back to back, thus forming the rear of the two long processions of such figures which surround the enclosure wall in both directions, moving toward the junction of the inner enclosure wall with the mortuary temple. The different versions preserved of the relief decoration show a certain freedom in the design of details. A similar license can also be observed for the size and, astonishingly, for the distance between the panels as well. The intended width of the panels seems to have been 11 p. (0.825 m.). In execution, however, we find panels 0.82 to 0.87 m. wide. The axes or centers of the panels should have been 10 c. (5.25 m.) apart, yielding a clear space between the edges of the panels 59 p. (4.425 m.) in width. The excess size of some panels, however, reduced this distance to 4.24 m. Such discrepancies show that much less care was taken in the later phases of the building program than at the beginning, when the architecture was surveyed with much greater accuracy.<sup>205</sup>

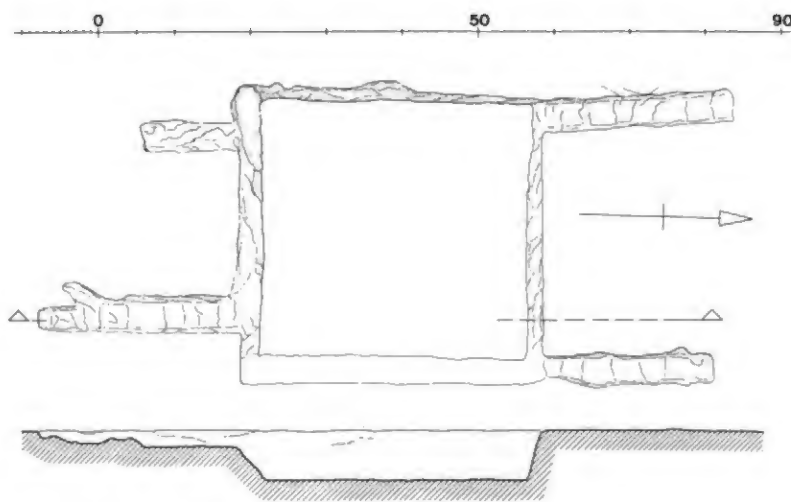


Fig. 22. Socket in surface of foundation of inner enclosure wall. Scale 1:10. See pls. 29c, 88.

The total height of the wall can no longer be measured. An overall calculation would suggest 10 c. (5.25 m.), or twice the thickness of the wall at the base. If one tries, however, to combine cross sections of the lower parts of the wall that are still standing with cross sections of the coping stones, the slope of the face of the wall of about 82° requires a somewhat greater height—still below 11 c., however. Furthermore, the restoration of two parts of the walls carried out in 1981 in the Metropolitan Museum of Art also indicates that a height of 5.49 m. must be assumed, which would best correspond to 10.5 c. (5.5125 m.). Why the ancient builders did not choose an even 10 c. is unclear.

The reconstructed distribution of the panels shows that the ancient builders had achieved a simple and well balanced system resulting in a total of 100 panels inside and 100 outside:

West wall north	13	} 50	West wall south	13	} 50
North wall	30		South wall	30	
East wall north	7		East wall south	7	

As no corners of the inner enclosure wall are preserved, we have no direct evidence for the arrangement of panels there. The overall layout, however, shows that the outside corners

had to be plain, because corresponding inside corner panels would have disappeared behind the corners. It was necessary, therefore, to leave a distance of one thickness of the wall (2.625 m.) blank. Our calculations at the southeast corner of the enclosure wall led to an assumption of an empty space of half a cubit from the inside corner and 5.5 c. (2.8875 m.) from the outside corner to the first panel.

This type of decoration on a pyramid enclosure wall is unique, apparently invented for the pyramid of Senwosret I in an attempt to create new features from traditional motifs, such as the procession of fecundity figures approaching the offering table from two sides, and the incorporation of royal names in the so-called palace façade. The inspiration for this creation might have been the Bent Pyramid of king Snefru at Dahshur, which was rediscovered as a cult center during the Twelfth Dynasty. There, a pair of huge stelae decorated with the royal names incorporated in palace façades flank the offering chapel at the east side of the pyramid.<sup>206</sup> This arrangement might have inspired the architects of Senwosret I to create a series of 100 stelae, so to speak, connected by the enclosure wall and surrounding the pyramid on all sides. There is also no doubt that the archaic recessed paneling enclosure walls of the Second and Third Dynasties, also revived in the Twelfth Dynasty,<sup>207</sup> may be counted as one source for the wall of the Horus panels of Senwosret I. It is astonishing that this ingenious creation at Lisht did not influence subsequent buildings but was—as far as we know—imitated only once, in the temple of Queen Hatshepsut at Deir el-Bahri.<sup>208</sup>

#### List of decorated panels at Lisht and Museum Collections (For placement of the panels, see the numbering system on foldout I)

##### I. REMAINS OF DECORATED PANELS STILL IN POSITION IN 1985

###### N 1 inside:

Lower end of palace-façade. W. 84.0–84.5 cm. Photo: L 84, 343.

###### N 2 inside:

Upper half of fecundity figure and lower end of palace façade. W. unknown, as right edge missing. Photo: L 84, 342.

###### N 2 outside:

Back of head and upper part of fecundity figure. Unfinished; hair and collar without details. W. unknown, as N edge missing. Photo: L 86, 628.

###### N 50 outside:

Legs of fecundity figure. W. unknown, as S edge missing. Photos: L 84, 383; L 13–14, 1204.

###### S 1 inside:

Lower end of palace façade. W. unknown, as S edge missing.

<sup>204</sup> Photo pl. 31c; also the top stone in photo pl. 31a.

<sup>205</sup> One must remember, however, that the positioning of the two center panels in the west wall and the panels of the corners created mathematical conflicts which could, perhaps, only be solved by experiment.

<sup>206</sup> Ahmed Fakhry, *The Monuments of Sneferu at Dahshur I* (Cairo, 1959) frontispiece.

<sup>207</sup> Senwosret II at Illahun: Petrie, *Lahun II*, 5, pl. 23; Senwosret III at Dahshur: *De Morgan, Dahshour I*, fig. 105; Amenemhat III at Dahshur: Arnold, *Amenemhat III* 68, 97; Khendjer at Saqqarah-South: Jéquier, *Deux pyramides* 7–8, fig. 7.

<sup>208</sup> BMMA 19, Dec. 1924, II, 18–19, fig. 15; March 1926, 14–15, fig. 11. In the upper hall of the temple it was used as a decorative pattern on the columns: Alexander Badawy, *A History of Egyptian Architecture III. The Empire* (Berkeley, 1968) 333, pl. 53.

Photos: L 84, 343, 428. From inside or outside part of the palace façade adjoining that of N 1. Photo: L 31–32, 256. Top stone with falcons of N 1 and S 1 together, probably from outside. Photos: L 31–32, 248. Disappeared.

S 2 inside:

Upper part of fecundity figure and offerings. W. unknown, as S edge missing. Photo: L 84, 344.

S 3 inside:

Shoulder, arm and offerings of fecundity figure. W. unknown, as S edge missing. Photo: L 84, 345.

S 4 inside:

Fecundity figure complete from upper thigh upwards. Badly damaged by villagers in 1985. W. 81.5 cm. Photos: L 84, 346, 426.

S 23 outside:

Upper part of fecundity figure and offerings. More or less complete. W. 85 cm. Photos: L 7–8, 537; L 84, 315–316.

S 24 inside:

Palace façade. How much preserved unknown, as deeply buried: see L 7–8, 535. W. 86 cm. Probably from coping stone at this location. Photos: L 7–8, 370, 532–534; L 84, 315–316.

S 25 outside:

Back of fecundity figure and W edge of panel. W. unknown, as E edge missing.

S 26 outside:

Head of fecundity figure and W edge. Lower part and inside still buried. W. unknown as E edge missing.

S 31 outside:

Stomach of fecundity figure and W edge. W. 86–87 cm.

S 32 outside:

Body and upper thighs of fecundity figure. Traces of demotic or Arabic graffiti? W. unknown, as E edge missing. Photos: L 84, 70, 400.

Additional fragments, some larger in size, were seen in 1984–1986 lying in the outer court northwest of the pyramid entrance. They certainly belong to the section of the north wall near the pyramid entrance. Smaller fragments are still visible in the ruins of the old Expedition house.

## 2. FRAGMENTS IN THE EGYPTIAN MUSEUM, CAIRO

From fragments found by the Metropolitan Museum of Art Expedition, a reconstruction was undertaken in the Egyptian Museum in Cairo. This reconstruction differs from those produced in the Metropolitan Museum because Cairo possesses the only example of the lowest section of the panels, with the fecundity figure. The low height of the ceiling in the Egyptian Museum, prevented the incorporation of this fragment in the reconstruction.

A detailed description is available for only Jd'E 60269 (see below).

Jd'E 58908: "blocks from temenos wall of pyramid."

58909: Palace façade used for reconstruction, *BMMA* 19, Dec. 1924, II, 36, fig. 3.

58910: Palace façade used for reconstruction, *BMMA* 19, Dec. 1924, II, 38, fig. 7 (photo 6 LN 145).

58911–58919

59210: "2 blocks from temenos wall of pyramid."

59211: "2 blocks from temenos wall of pyramid."

60269: Fecundity figure in three large and some smaller fragments, from inner court north side, 10 m. west of pyramid entrance. Cramp hole on top surface. Orig-

nally ca. 44 cm. thick. W. of panel: 86 cm. H. of figure: 128 cm. Space above feet to horizontal joint: 7.5 cm. *BMMA* Nov. 1933, 8–9, fig. 9 (photo L 32–33, 161).

Photos of fragments in Cairo:

6 LN 142 (*BMMA*) 19, Dec. 1924, II, 37, fig. 4)

6 LN 143 (*BMMA*) 19, Dec. 1924, II, 36, fig. 3)

6 LN 145 (*BMMA*) 19, Dec. 1924, II, 38, fig. 7)

6 LN 146.

L 32–32, 252, 256, 257, 262, 266

## 3. FRAGMENTS IN THE METROPOLITAN MUSEUM OF ART

All fragments in the Metropolitan Museum of Art were incorporated in 1934 into the four reconstructed panels (see Hayes, *Scepter* I, 184). None is complete, however, and not all the fragments that were connected originally belonged together.<sup>209</sup> In 1983, a second, improved reconstruction was undertaken (see *BMMA* 41, Winter 1983/84 pls. 14–15).

A. MMA 34.1.205: Hawk looking left, Horus-name with Kheperkara-name.

Along the left edge of the hawk and Horus name, a ledge, 8–10 cm. wide is left undressed where it was covered by a wall. This feature permits us to determine the original location of the panel. Since no walls approach the inner enclosure wall from outside, such a juncture must be looked for on the inside surface of the wall. The right to left direction of the panel indicates its placement in the southern half of the inner court. There, only one panel is in close proximity to walls: S 37. This panel was indeed at a place which was later disturbed by the addition of the enclosure wall of the Ka-pyramid (Phase P 1, see page 73). When this wall was added, the panels were not yet carved but were still bosselated. One wonders, however, why the sculptors did not shift the panel a few inches to the west. Panel A consists of the following fragments. Numbers not preceded by MMA are field numbers:

32 L 077: *BMMA* 15 July 1920, II, 38 fig. 6 and photo 6 LN 148. Head of hawk with double crown.

32 L 093: Photo L 31–32, 267. Body of hawk.

32 L 069: Photo L 31–32, 260. Lower part of hawk in two fragments, tip of tail separate.

MMA 33.1.182: (field number 32 L 067): Photo L 31–32, 258. Complete inscription 'nḥ-mswt, with foot of hawk and upper end of palace façade.

MMA 09.180.10: Photo L 8–9, 43. Part of kheper and Ra.

32 L 087: Photo L 31–32, 273. Parts of palace façade in groups of three and five fragments, with edge of head of a fecundity figure.

B. MMA 34.1.206: Hawk looking right. Horus name with Kheperkara-name.

Panel B consists of the following fragments:

32 L 061: Photo L 31–32, 251. Complete upper part of hawk from middle of body to end of inscription.

32 L 073: Photo L 31–32, 255. Upper part of hawk with half of crown.

32 L 084: Photo L 31–32, 274. Fragment of palace façade.

<sup>209</sup> In panel 34.1.205, for example, traces of the signs ḥ and 𓂏 in the royal titles indicate that the left half was originally connected to the right with Senwosret and not with Kheperkara as it appears now. More discrepancies appear in the royal name of panel 34.1.207.

c. MMA 34.1.207: Hawk looking right, Horus name with Kheperkara-name.

Panel C consists of the following fragments:

32 L 089: Photo L 31–32, 272. Complete crown of hawk.

MMA 09.180.9: Photo L 8–9, 45. Upper part of hawk without crown.

32 L 072: Photo L 31–32, 261. Tip of wing and tail of hawk.

MMA 09.180.11: Photo L 7–8, 370. Fragment of Kheperka(ra) and L 8–9, 37. Found together with coping stone (pl. 35 e–f).

MMA 34.1.207: Photo L 12–13, 207. Foot of hawk and part of 'nh.

32 L 063: Photo L 31–32, 253. Fragment of ('nh-ms)wt.

d. MMA 34.1.208: Hawk looking left, Horus name with Senwosret name.

Panel D consists of the following fragments:

MMA 09.180.8: *BMMA* 3, Sept. 1908, 170, fig. 2. Photos: L 7–8, 563, L 8–9, 40. Lower part of crown and head of hawk.

32 L 093: Photo L 31–32, 267. Body of hawk.

32 L 068: Photo L 31–32, 259. Fragment of 'nh-(ms.)wt.

32 L 081: Photo L 31–32, 279. Feet of hawk and fragments of 'nh-ms.(wt) and head of *usr*-sign with unexplainable difference of level.

## CHAPTER VI

# The Pyramid of Senwosret I

### 1. The Superstructure

(figs. 23–24; pls. 38–41, 42a–b, 93–96)

Sources: *Lisht Journal* I, 56–60, 94–95, 119, 122; *BMMA* 19, Dec. 1924, II, 34–35; 28, April 1933, II, 5–14, figs. 5–12; 28, Nov. 1933, II, 4–8, figs. 1–5.  
PHOTOS: 6 LN 43; L 31–32, 64, 85, 107, 168; L 33–34, 268, 587, 590–593.

The pyramid of Senwosret I was first investigated in 1882<sup>210</sup> by Maspero, who attempted to reach the burial apartments through the entrance corridor from the center of the north side of the pyramid. There are no records, however, that indicate in what state the entrance was found—whether it was completely covered and had to be searched for, or had remained exposed after the pyramid was robbed (see page 69). Probably no excavations were carried out around the pyramid. Gautier and Jéquier seem to have tried to reach the chamber from this entrance and from a robbers' tunnel in the center of the south side: there the French expedition apparently cleared part of the pavement of the inner court.<sup>211</sup>

The Expedition of the Metropolitan Museum of Art completely excavated the inner pyramid court and the foot of the pyramid along its western side, most of the north side, and the area from the pyramid temple to the south. They left the south part of the inner court and northeast corner of the pyramid untouched, and seem not to have exposed the foot of the pyramid from the mortuary temple northward. They also cleared the surface of the pyramid mound at the south end of the east side, exposing the radiating core walls (see page 66), which are still partially visible today. In the course of the recent work, we cleared part of the top of the pyramid mound (see pl. 95a) in order to study the construction of the core masonry and parts of the casing in the center of the west side.

The pyramid, with a base length of 200 c. (105.00 m.), belongs to a group which included the pyramids of Radjedef, Mycerinus, and Neferirkara of the Old Kingdom and of Senwosret II, Senwosret III, and Amenemhat III at Dahshur and Hawara of the Middle Kingdom. In size Senwosret's pyramid surpassed all since that of Neferirkara of the Fifth Dynasty, including that of his father Amenemhat I, whose pyramid has a base length of only 160 c. (84.00 m.).

According to Dorner,<sup>212</sup> the exact base lengths of the pyramid of Senwosret I are:

From SE to SW corner	105.227 m.
From SW to NW corner	105.237 m.
Measurement from triangulation	<u>105.220 m.</u>
Average:	105.228 m.

There is no doubt that the ancient builders aimed to achieve a length of exactly 105.00 m. (200 c.) and that the deviation of about 22 cm. was due to an error of the ancient surveyors.

The intended slope of the pyramid casing was apparently 6:7 (6 p. back on 7 p. or 1 c. vertical height), which corresponds to 49°24'. As the masonry has since settled, all casing blocks now show an unintentional inward slope of about 1°. The original slope of the outer face can therefore no longer be measured from an ideal horizontal line, but must be calculated from the difference between the faces of the same block. The height of the pyramid that would result from the ideal base length and inclination of the faces would have been 61.25 m., or 116 c. plus an additional 35 cm.

Today the pyramid has been reduced to a sand- and rubble-covered mound only 23 m. high. It is still surrounded, however, by some courses of the casing blocks which reach a height of 8 courses in the northern part of the west face, and a single backing stone is preserved 12 m. above ground. The destruction of the pyramid, therefore, proceeded from top to bottom and was least thorough at the west face, which was less convenient for the transportation of the material. The time of the destruction of the pyramid and its surrounding buildings is not known, but it must have begun before the Amarna period. In the first place, no disfigurement of gods and gods' names could be detected in the relief decoration of the mortuary temple, a fact indicating that the temple had already been destroyed. Furthermore, a basket with bronze vessels sealed with a scarab with the name of Tutankhamun was discovered hidden in the debris of the destroyed pyramid casing (see page 98), again proving that the destruction must have started before his reign. One would expect, of course, that the demolition of the pyramid started in the Second Intermediate Period under the rule of kings who, like the Hyksos kings,<sup>213</sup> might have had no interest in the preservation of ancient buildings. There is no actual proof of this hypothesis.

The pyramid was erected on the flat surface of the desert conglomerate, which sloped slightly down from the west to the east or southeast, and may have had some irregularities which had to be leveled by using subfoundation blocks of different heights. One can observe that the pyramid base (that is,

<sup>210</sup> Gaston Maspero, *Études de mythologie et d'archéologie* I (Paris, 1893) 148. See a lively description of this work by Charles Wilbour, *Travels in Egypt*, 249–251.

<sup>211</sup> *Licht* 13.

<sup>212</sup> Joseph Dorner of the Austrian Archaeological Institute, Cairo, was kind enough to provide us with a grid of some essential measuring points around the pyramid and to determine the astronomical north. According to him the pyramid deviates about 1°30' from true north to northwest.

<sup>213</sup> Such a date was already proposed by Gautier, *Licht* 14, who reasoned that only a short time could have passed between the completion of the pyramid and the digging of the robbers' tunnel at its south, since the debris of this excavation rested immediately on the clean court pavement in front of the foot of the pyramid. See his drawing, *Licht* fig. 7.



the subfoundation and the foundation layers up to court level) consists of two layers at the northwest and three layers at the southeast corner. As mentioned on page 58, it is not easy to make a clear distinction between the foundations of the pyramid and those of the surrounding inner court, because in some parts both sets of foundation blocks are interconnected. Furthermore, all visible foundation blocks of the pyramid protrude at least one cubit into the area of the court.

The question of a foundation trench has not been definitely answered. The Expedition showed on their plan (*BMMA* 28, April 1933, II, 13, fig. 11) a foundation trench of which the outer edge lay 0.70 m. in front of the foot of the pyramid, and the inner edge 3.65 m. behind it. It has an outward extension near the pyramid corners and is 1.55 m. (3 c.) deep.

There is some question whether the Expedition really found this trench or only assumed its existence. In no place accessible to us could we find convincing proof for it. At the southeast corner of the pyramid, for example, where one can still crawl under the pyramid foundation into the foundation deposit pit, neither 0.70 m. in front of the pyramid foot nor 3.65 m. behind it one can see a step in the *gebel* surface. The subfoundations of the court and of the pyramid extend on the same level to the east and to the west (see page 58). At the northwest corner of the pyramid, however, there is a step inside and under the pyramid, about 3.34–3.80 m. from its foot. Here the rock rises up to court level, so that the core masonry rests without foundations on this higher level. Only the casing and backing stones of the pyramid have a built foundation. The outside edge of the trench could not be clearly ascertained. This evidence may indicate that only in the northwest, where the *gebel* surface was higher than at the southeast corner, was such a trench cut, while a platform was constructed in the southeast.

The pyramid base (upper side of the foundation blocks) protrudes about 1 c. into the court, and the top surface of its upper course is flush with the level of the court. Instead of securing the foot of the pyramid by embedding the lowest course of casing blocks in a flat socket, the ancient builders took measures that ultimately did nothing to improve the stability of the pyramid casing, but in fact weakened the structure. At the foot of the pyramid, except for a few feet near the corners, a step 15 cm. deep was cut out of the foundation block so that the lower edge of the casing stone was positioned directly on top of the riser of the step. The pavement slabs of the court were abutted against this riser (pl. 94). The reason for this procedure is unknown, but may have to do with problems of surveying the outlines of the pyramid or levelling its base.

If we assume that the lower bed of the first casing block indicated the intended floor level of the pyramid court,<sup>214</sup> we find that there is a difference in height of about 2–3 cm. between the southeast and northwest corners of the pyramid. The pyramid base close to the pyramid entrance is about 15 cm. deeper than the pyramid base at the southeast corner, and 13 cm. deeper than that of the northwest corner:

	HEIGHTS BELOW NN IN METERS		
	NW Corner	SE Corner	Entrance
Foot of casing	–0.08—–0.09	–0.10—–0.11	–0.235 cm.
Step in front of pyramid foot	–0.28	–0.33	–0.39

This last difference is so great that it must be the result of the settling of the masonry which can be expected close to the entrance cut (see page 66).

The casing blocks are between 2.10 and 3.50 m. deep and, as usual, arranged as headers. The lowest course shows differences in height between 1.19 and 1.59 m. To the east of the pyramid entrance the heights of the first three courses of casing blocks are:

Course 1	1.59 m.	Course 3	0.76 m.
Course 2	1.60 m.		

At the west side of the pyramid we measured:

Course 1	1.27 m.	Course 5	0.96 m.
Course 2	1.02 m.	Course 6	0.735 m.
Course 3	0.91 m.	Course 7	0.655 m.
Course 4	0.72 m.	Course 8	0.67 m.

This sequence shows a reduction in height of about one half from the first course to the eighth course, a change undoubtedly required by the increasing effort needed to lift the blocks. The horizontal beds of the casing blocks were certainly originally intended to be horizontal, but are no longer so. At the west side where we cleaned a part of the casing about 10 m. wide (see pl. 93a) the deviations of the horizontal beds were as follows:

Bed between course 4 and 5	4.0 cm.
5 and 6	4.5 cm.
6 and 7	0.80 cm.
7 and 8	3.0 cm.

The casing blocks have one or two pry-holes at the lower edge of one of their lateral faces, and have therefore been shifted into position from the side and not from the front. This sideways positioning of casing blocks was the usual procedure since the Old Kingdom.<sup>215</sup>

The casing blocks were set with the rear half on the surface of the front part of the backing stones, which are up to 2.20 m. deep. The height of the backing stones probably corresponds to that of the casing blocks. The backing stones arrived from the quarries roughly squared, their quarry marks still preserved at least on their rising joints and back sides. The casing blocks, however, lost these marks, except on their backs<sup>216</sup> in the final dressing. One corner casing block is still preserved, resting slightly east of the pyramid entrance, where it had probably fallen from the northeast ridge of the pyramid. It is 2.31 m. long, 1.40 m. deep and 0.68 m. high, and had been attached to its adjoining blocks with two dovetail cramps on the long side and one on the short. The traces on this block and the cramps observed on other blocks indicate that all the casing blocks were probably joined with such cramps, a few of which were found still in position. The cramps, cut from several kinds of wood, were 36–42 cm. long and incised with both names of the king, the Senwosret- and the Kheperkara-names.<sup>217</sup> Such cramps could probably not have prevented the casing from settling under the weight of the pyramid. The settling of the masonry seems to have affected the casing and the backing stones rather seriously, for the visible blocks near the pyramid entrance (pl. 41a) and at the western side (pls. 40–41) are virtually covered with patches of all sizes and shapes,

<sup>214</sup> Because the surface of the court pavement has weathered away so badly and the foot of the few existing casing stones is also eaten away by wind, it is not possible to determine with certainty the intended ancient base-line.

<sup>215</sup> Both pyramids of Snefru at Dahshur, pyramid of Cheops.

<sup>216</sup> See n. 34.

<sup>217</sup> For a detailed study of the cramps, see the second volume of this publication.

some of them extending over nearly the complete surface of a block. The position of some patches in the center of the blocks indicates that they fill gaps caused by the removal of flint knolls. Many patches, however, cover the upper or lower edges of blocks and clearly show that some damage along the edges had to be masked. Since the blocks were not shifted into position from the front, this kind of damage cannot have come about from rough handling during construction, but resulted from an uncontrolled settling of the masonry presumably caused by an open construction shaft under the pyramid. This assumption is supported by a one inch wide crack zigzagging down the casing east of the pyramid entrance (pl. 41a) that was once covered by a sequence of three patches.

The repair of the pyramid casing must have been a prolonged and troublesome enterprise unforeseen at the beginning of the construction. Other pyramids of the Old Kingdom seem to have developed similar problems during their construction,<sup>218</sup> but on a much smaller scale. We do not know how the masons reached the surface of the pyramid casing after construction was completed. There are no cuttings visible for scaffolding beams, other than the cuttings from the patches themselves; these could, of course, have been used to support such beams, but their use would have resulted in scaffolding of rather irregular shape.<sup>219</sup>

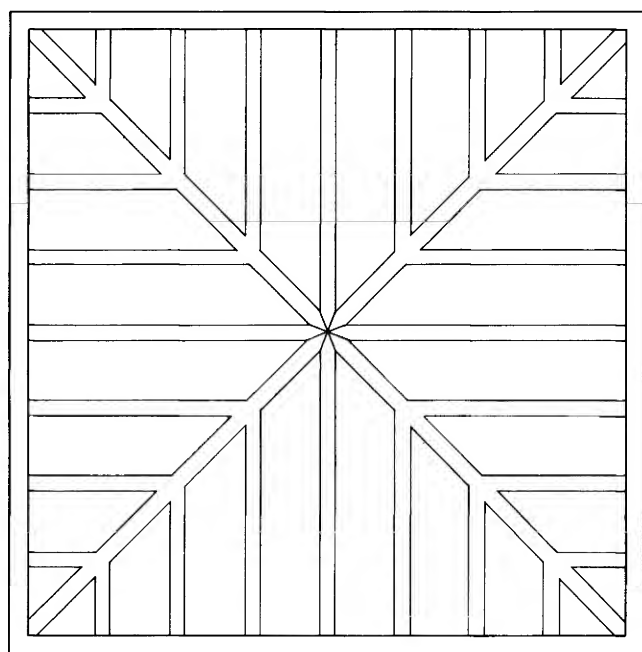


Fig. 23. Reconstruction of framework of skeleton walls in the core of the main pyramid. See pl. 38a.

The layer of casing and backing stones measuring about 5 m. (roughly 10 c.) in thickness, encased the pyramid core, which was constructed in an unusual and interesting manner. The clearing of the southern part of the east side of the pyramid mound by the Expedition, together with our recent studies of the top of the structure and above the casing of the western side, revealed that the pyramid core consists of a system of huge walls radiating from the center toward the four cardinal points and four corners of the pyramid; the diagonal walls are flanked on both sides by at least three additional branches. These walls, about 3–5 c. wide, were made of huge, roughly shaped blocks of local limestone, decreasing in size as they rose. The compartments formed by this framework were filled with slabs of local stone (*dabsh*), scarcely, if at all, dressed, and embedded in sand

and mortar. Mortar was also used to improve the stability of the outer faces of the *dabsh*-fill where it met the back sides of the backing stones. The *dabsh* are so small that one or two men could easily carry the stones. This masonry was set in steps about 1 c. wide and on these the backing stones were laid.

This method of core construction was used in a rather rudimentary manner in the base of the obelisk of Niuserra<sup>220</sup> and in the core of the pyramid of Neferirkara.<sup>221</sup> Later it was repeated in the pyramids of Amenemhat II at Dahshur and of Senwosret II at Illahun, and in the three latest pyramids of the Twelfth Dynasty, with the difference, however, that from Senwosret II onward the core masonry consisted of brick.

## 2. Entrance Cut and Corridor

(figs. 24–27; pls. 42–44, 89–92)

Sources: Lisht Journal I, 96–11; BMMA 28, Nov. 1933, II, 4–6. Tomb card 638A.

PHOTOS: L 32–33, 114–117, 119, 341, 342; L 33–34, 197, 198, 218, 219, 224, 228, 229, 233, 242, 587, 590, 591, 596; L 84, 176–182, 222, 243, 244, 283–289, 304–307, 411–413.

PLANS: AM 2634–2636.

In accordance with the tradition of the Old Kingdom, the entrance corridor of the burial chamber starts in the middle of the north side.<sup>222</sup> The entrance to the corridor should have been in the court pavement, probably just in front of the foundation blocks of the pyramid (pl. 99 C), but it is now completely destroyed. During the excavation of the north outer court, the Expedition came upon the so-called entrance cut, a preliminary ramp or staircase used during the construction of the entrance corridor and the underground apartments. Unfortunately, the Expedition was not aware of the technical significance of this construction and documented it only by sketches and a few photographs. After its excavation in 1932/33 and 1933/34, the area was covered with extensive mounds of debris so that we were only able to re-excavate the section immediately north of the inner enclosure wall (see pl. 43 c–d). From the available sources the situation can be reconstructed as follows:

### Phase A/B:

The entrance cut starts 35.4 m. in front of the northern side of the pyramid, and probably had a width of 5.3 m. (10 c.). It consists of a sloping *dromos* or open ramp cut into the desert surface and disappearing under the inner enclosure wall of the pyramid at a depth where it could no longer be followed during our excavation in 1987 because of the risk of collapse. This *dromos* was paved with bricks arranged in rows of 22 in the shape of steps. The courses do not overlap each other; this is to say, the joint between each brick and the step behind remains visible. The Expedition assumed that there were eight layers of

<sup>218</sup> The Bent Pyramid of Dahshur and its Ka-pyramid show such patches. Lauer, *Téti* 37, pl. 19, A–B, shows more.

<sup>219</sup> I. E. S. Edwards kindly drew my attention to Vyse, *Pyramids* III, 61 where putlock holes cut into the casing blocks of the pyramid of Senwosret III at Dahshur are mentioned. It is impossible, however, to decide whether the holes seen were for scaffolds and not for patches.

<sup>220</sup> Borchardt, *Re-Heiligtum* 36–37, fig. 20.

<sup>221</sup> Borchardt, *Neferirkere* 41, fig. 49.

<sup>222</sup> Only to be changed by Senwosret II in his pyramid at Illahun. From then on, all pyramid entrances were hidden in unexpected places.

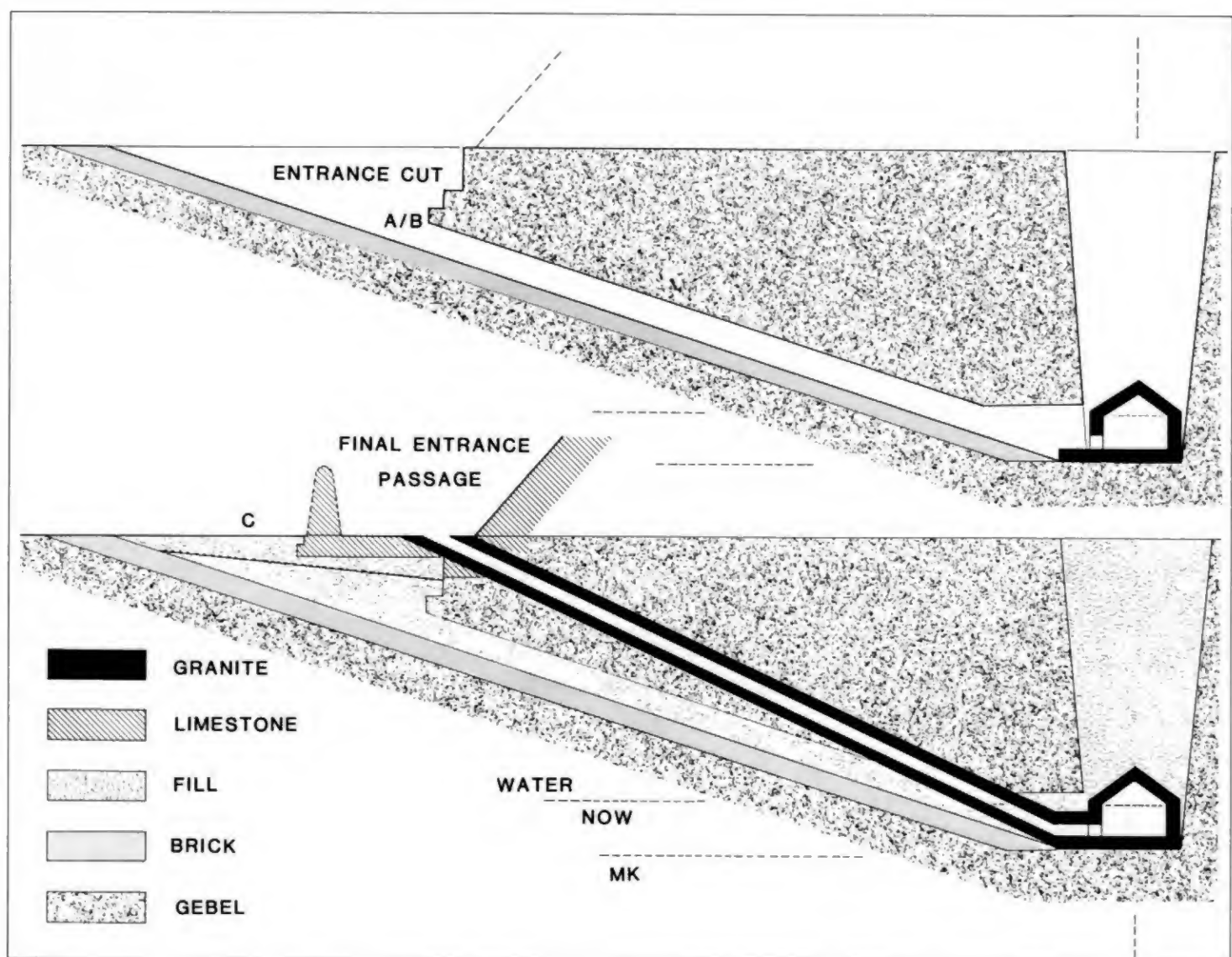


Fig. 24. Schematic section through entrance cut and entrance corridor of the pyramid, showing the building phases. Scale 1:500. See pl. 92.

bricks and that the *gebel* surface lay 1.2 m. below the surface of the steps. No photograph shows this sequence, however, and the existing sketch gives the impression that at the one place where the excavation was carried down to 1.6 m., bricks arranged as steps were still being exposed. If the *gebel* was actually the surface of an older phase A of the entrance cut, this cut would have led deep into the center of the *gebel* under the pyramid. A sketch (fig. 25) of the later, upper phase B of the steps and the description of this area show that the steps were covered with beams 30–40 cm. wide and 12 cm. high; apparently a wooden staircase was laid on top of the steps. The exposed edge of the beams was much destroyed by traffic, so that the surface of the *dromos* was more like a ramp than a stairway.

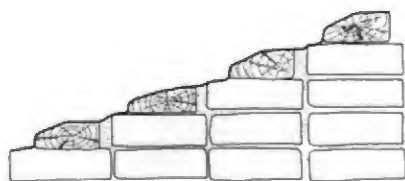


Fig. 25. Timber covering steps of entrance cut, phase B. See pl. 43b, 92.

#### Phase C:

This staircase or ramp B was not the final one, and when the construction of the burial chamber had been concluded and the

work for the actual entrance corridor begun, a major change took place.

The present granite entrance corridor would have started 1.75 m. in front of the foot of the pyramid and would have sloped downward at an angle of  $25^\circ$ . The old entrance cut (B) was therefore useless for the construction of the corridor, and in consequence it was filled up with sand (6). A new tunnel was excavated from the intended foot of the pyramid directly into the burial chamber. Only the open section of the entrance cut (C) could now be used for transportation, but with a reduction of its original slope of  $18^\circ$  to  $5^\circ$  by means of the addition of a fill of sand, which was also covered with wooden beams. Our excavation shows that the planks were not the actual working surface, but that they were buried in a layer of limestone chips sealed with mud.<sup>223</sup> The surface of this ramp (C) was probably opened by the Expedition in the inner court just in front of the remaining blocks of the foundations for the granite corridor. The construction debris of the tomb corridor was carried out over this ramp, and thereafter the blocks for the floor, walls, and ceiling of the chamber and corridor were moved in.

<sup>223</sup> Wooden beams placed not on top of the surface of the street but half- or completely buried in the limestone chip and plaster seem to have been quite frequent. We observed this feature at construction ramps west of the pyramid and south of the causeway. (To be published in the second volume of this publication.)

#### Phase D:

After this work was concluded there was no need for an entrance cut; it was filled with builders' debris (3) and broken brick and finally sealed by four layers of regularly laid brick (3, 3A). This mass of brick was subsequently cut to accommodate the foundations of the inner enclosure wall of the main pyramid (2) and the enclosure wall of the small pyramid 7. The brick pavement was not the final surface of the outer court; the so-called leveling walls were laid over it (1) and it was covered by the final court surface.<sup>224</sup>

Two water jars were sunk through this last surface into the brick pavement of the entrance cut. The photograph showing them surrounded by brickwork wrongly suggests that they are contemporary with the layers of brick. The date of the vessels—they are certainly later—shows, however, that they must have been inserted later, during some activity surrounding the nearby burial of royal persons. The entrance cut reminds us of similar constructions at the pyramids of Djoser, Sekhemkhet, the lower pyramid of Zawjet el-Aryan, and to some extent the pyramid of Radjedef at Abu Roash. A feature common to these pyramids is the very deep central shaft sunk into the bedrock for the construction of the burial chambers. The lower parts of these shafts could not be cut directly from the top because of the troublesome work of pulling up the waste and lowering down the heavy blocks for the burial chambers. This work could only be achieved by means of a sloping ramp starting, at the first three pyramids, outside the line of the foot of the intended pyramid. The burial chamber of Senwosret I also seems to lie very deep in the bedrock, probably between 22 and 25 m.; the angle of the intended granite corridor would have been too steep for the lowering of the blocks for the chambers, and so a preliminary construction ramp (the entrance cut A/B) was deemed advisable. This ramp was abandoned only when the final entrance corridor from a different origin and a steeper angle was built.

As in many other places in the mortuary precinct, a small, half-destroyed pit for a deposit was discovered opposite the pyramid entrance (see page 93), cut into the pavement of the inner court under the inner side of the enclosure wall. Another, much larger deposit was excavated by the Expedition in the outer court immediately south of the entrance cut (see page 92). Neither was a foundation deposit from the start of the work; both date instead to its conclusion, or even to the burial of the king.

The area around the mouth of the granite corridor was so badly destroyed by previous attempts to open the pyramid that it would have been too dangerous for the current mission to carry out further excavations. From what is visible today, one may conclude that the mouth of the passage opened into the inner court at a point from 1.75 m. to 4.2 m. in front of the foot of the pyramid,<sup>225</sup> where it was completely covered by the entrance chapel (see page 76).

The corridor consists of a long row of granite floor blocks, each about 4 m. wide and probably 0.75 m. thick, and weighing about eight tons.<sup>226</sup> On both sides, the bed for the side walls of the corridor cut about 6 cm. deep could have been used as a track when the wall blocks were lowered. The floor also carries a series of nine or ten small limestone slabs inserted into the granite blocks roughly every 5 m. along the middle of the corridor. These slabs, 30 cm. wide, 55–56 cm. long and 7.5 cm thick (½ c. x 1 c. x 1 p.), were secured with plaster, and their surface has been worn away by the construction and excavation activities in the passage. The distances between the stones

are not quite uniform and, when measured along the sloping surface of the ramp, do not conform to a system of cubit measurements. It must therefore be assumed that the stones were placed according to a system of horizontal measurements, which would indeed result in 5.25 m. (10 c.) spacings. This distance was probably marked by a cross on the surface of the slabs.

If measuring cord and plumb were used, the measurements would have to have been taken before the ceiling of the passage was put in, because afterwards the height of the passage would have been too low to stretch the cord from one slab to the next. The method of horizontal measurements would have enabled the ancient surveyors to determine the horizontal distance of the burial chamber from the passage entrance or foot of the pyramid, and thus to place it exactly in the center of the pyramid. In no other pyramid has such a device been recorded, and again we must acknowledge the precision aimed for and probably achieved by the builders of Senwosret I.<sup>227</sup>

The corridor originally contained ten or eleven measuring slabs, depending on the length of the passage: three are hidden by the remaining granite plugs and broken away near the entrance. Six are visible in the central part of the corridor. One or two more can be expected to lie further down in the sub-merged part.

The corridor was intended to be 11 p. (0.825 m.) wide. The walls consist of a long row of blocks about 1.5 m. (3 c.) wide and with a height of roughly 2 c. when measured at a right angle to the slope. These blocks are normally of granite. Only in the upper section of the passage did we find a part of the eastern side and apparently the whole western side made instead of limestone. The reason for this change is unknown. On the top surface of the wall blocks there is a socket for the ceiling blocks, which are also granite.<sup>228</sup> Only their visible parts were flattened and smoothed, the outer surfaces being left rounded as they came from the quarry. Only one block is different, either intentionally or because it was first made for another purpose. This block has a socket which must have been clearly visible from below when the corridor was still open (pl. 90 E). Now the cavity is hidden by the granite plugs, but it can still be seen through the joints.

The space behind the wall blocks and on top of the ceiling slabs, was filled with *dabsh* or smaller irregular blocks of limestone.

<sup>224</sup> The brick surface was badly damaged and no final court level could be determined.

<sup>225</sup> If the sketch AM 3221 of the pyramid entrance of Amenemhat I is not mistaken, the entrance there should have been higher up on the slope of the pyramid casing. There are many examples of pyramid entrances at the foot of the pyramid through the pavement of the court.

<sup>226</sup> The floor blocks rest—at least at the upper end where they are visible—on two layers of huge limestone blocks. How far down this subfoundation continues is not known. According to *BMAA* 28, Nov. 1933, II, 6, fig. 4, two of these bore inscriptions mentioning the year 10, but a complete excavation of these blocks in 1984/85 revealed only traces on the north side of the lower eastern block which did not resemble the published inscription at all. The actual extent of the inscription must unfortunately remain unknown. Its evidence would not have contributed very much to determining the date of the beginning of the pyramid construction, since the building activity connected with the entrance cut A/B and the burial chamber would already have been carried out, starting perhaps with the years 6 and 7.

<sup>227</sup> A bench mark found in the passage of the tomb of king Mentuhotep might have been displaced by stone robbers (Arnold and Winlock, *Mentuhotep* 27).

<sup>228</sup> This walling of walls, floors, and ceiling of the passage with granite blocks has a long tradition, extending from Cheops and Chephren to the pyramid of Amenemhat I.



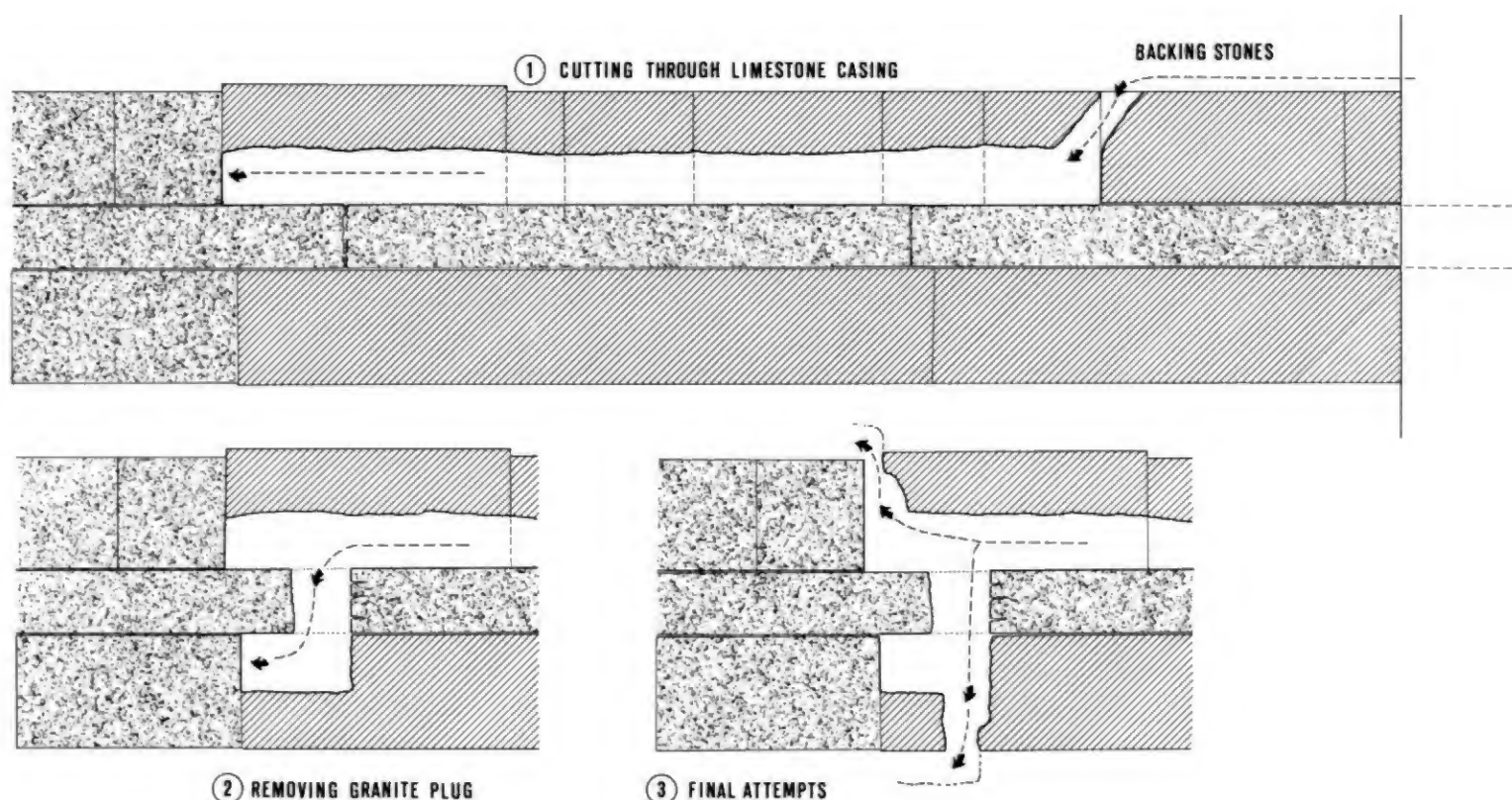


Fig. 26. Three phases of tomb robbers' attempts to break into the corridor of the main pyramid. Scale 1:100.

After the burial of the king, the corridor was blocked by sliding down a series of about six or seven granite plugs, the upper ones of enormous size and weighing over 20 tons. They exactly fit the section of the passage (0.82 x 1.05 m.). The first from the top was about 8.5 m. long, but has lost its upper end thanks to the activities of the tomb robbers. On the underside of its broken top end can be seen a groove of which the original length and purpose are unknown. The lower end of this plug cracked when it crashed into the next one. In a vain attempt to prevent such damage, the top end of the second plug was provided with a horizontal groove about 27 cm. in height and 20 cm. deep in which a beam or a sandbag could have been fixed. The second plug also has a damaged lower end; long fissures show that the plugs must have slid down uncontrolled, at considerable speed. The top end of the third plug must also have been damaged, since it was broken off by the tomb robbers; they forced their way back into the main corridor at this point, where the resistance of the plug was weakened by the cracks. Wilbour reports that the workmen of Maspero had already hammered away two plugs of 5 m. each and were working on a third (which would have been fifth from the top) when he visited Lisht on January 22, 1883. When he returned on April 6, they had proceeded only a few meters but hoped to finish in a month's time. Now, however, with a plan available, we can estimate that there were still ten to fifteen meters of granite to be hammered away (plugs nos. 6 and 7) until they could have reached the end of the corridor and with it, the groundwater.

Before the closing of the pyramid, the plugs were stored somewhere in the north, probably in the outer court. They had to be moved through a gap which was kept open in the inner enclosure wall in front of the pyramid entrance and which could be closed after the burial.

The entrance chapel could have been built before closing the pyramid because the mouth of the passage was in the center of the chapel just inside its door. The handling of the granite plugs,

however, would have endangered the chapel and its wall decoration, and it would have been wiser to build the chapel only after these maneuvers.

The interior of the pyramid was robbed at some unknown time,<sup>229</sup> certainly by a large group of people—one would have to call them professionals—who took incredible pains to gain the treasures in the royal burial. Their successful attempts, as well as their failures, can be reconstructed. A first trial tunnel was probably broken through the center of the south side of the pyramid;<sup>230</sup> in 1895/1896 Gautier's men were able to follow it for about 35 m., until it disappeared in the ground water. This tunnel is irregular and rather steep, and it is not known if it successfully reached the burial chamber.

The main and certainly successful attempt was made from the north. Suspecting correctly that the chapel would hide the entrance, the robbers dismantled both it and the court pavement until they reached the top of the first granite plug at the mouth of the passage. Underestimating the length of the plug, they first started to chisel its head, but soon stopped and looked for a softer stone to penetrate. They cut a small opening into the backing stones of the western passage wall;<sup>231</sup> carefully pulling out the small filling stones, they produced a rough tunnel 2.5 m. long. In the naive hope that they were already behind the granite blocking, the robbers moved eastward again and

<sup>229</sup> Gautier suggested (*Licht* 14) the Hyksos period. It must have happened before the groundwater reached its modern level. See n. 213.

<sup>230</sup> *Licht* 7-8, 13, figs. 7-8.

<sup>231</sup> *Licht* 88, figs. 106-107; *BMMA* 3, Oct. 1908, 185, fig. 3. As the pyramid of Amenemhat I was opened in exactly the same way, one would suspect that it was done by the same people. They dug their way behind the passage walls without trying to break into the corridor before its end. Did they make use of their experience in the pyramid of Senwosret I? By cutting this tunnel, the robbers exposed the former front sides of the corridor wall blocks with the name of Chephren, which had been re-used by Amenemhat I (Goedicke, *Re-used Blocks* 23-24 [7]).

chiseled through the limestone corridor wall.<sup>232</sup> They did not break into an empty corridor as they had hoped, but found instead the top of a second plug. They had no choice now but to follow it downwards by chiseling a tunnel through the hard limestone of the corridor wall. This tunnel is about 0.70 m. wide and 0.90 m. high with a steep and dangerously undulating floor. The second granite plug ended after 8.5 m., but a third followed. Then, after a total of 13 m. of tunneling, the robbers were stopped by the change of the corridor wall from limestone to granite. Fortunately for them, at this point the second granite plug of the corridor had damaged the upper end of the third, and probably with little exertion a breach was cut through the granite of the joint into the northern side of the corridor. Here the robbers hoped to find the limestone corridor wall—but in vain! Instead, the limestone casing of the upper part of the corridor changed to granite, and the tomb robbers now found granite everywhere: floor, ceiling, both walls, and the plug in the middle. There was nothing to do but chisel out the corridor walls in order to get into the area of the backing stones, which could be pulled out more easily. We do not know which side was attempted, because in the east as well as in the west a small hole leads out into a rough tunnel filled with sand. One or both attempts must have been successful, but the effort had to be considerable, because the backing stones were heavy and had to be moved a distance of more than 30 m. up through a narrow and dangerous tunnel with a minimum of air. In the end, however, the burial chamber was reached and robbed. All objects of any value were carried up to be inspected and divided, a task which could only be done in the small, chamberlike space at the lower end of plug 2 with two side branches in the limestone. It was probably here that Reis Rubi el-Hamzaoui in 1882 found for Maspero the remains of what the robbers had left:<sup>233</sup> parts of several wooden boxes, alabaster vessels in the shape of poultry, parts of four canopic jars of alabaster (uninscribed), and a golden dagger sheath. Maspero's workmen apparently did not follow the robbers' tunnel behind the wall casing, but chiseled their way down the main corridor by removing the plugs. This incredible work was abruptly ended when, after removing nearly 30 m. (!) of granite, water suddenly flooded the corridor.

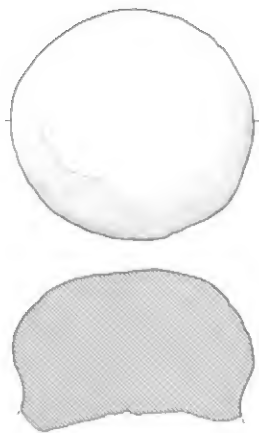


Fig. 27. Granite handle of the lid of the royal sarcophagus(?) found in the entrance corridor. Scale 1:4.

Lansing's efforts in 1934 and ours in 1984 were stopped at the same place by the water, which seems to seep through the joints of the floor and rise through the sand that fills the corridor.

One must ask why the corridor below the water level is filled with sand and not blocked by granite plugs. Only two answers seem possible: 1) Maspero's workmen were actually further

down, and the sand entered since 1882. This theory is not convincing, however, because we know that the sand blown into the corridor since 1934 only blocked the corridor entrance and did not reach so far down. 2) Maspero's workmen actually removed the lower end of the last plug and encountered the water which was standing behind the plug and could only flow in when the granite was removed. In that case, the sand may be the original sand that the pyramid builders placed in order to cushion the impact of the first plug lowered into the corridor, which would otherwise have crashed into the floor of the horizontal section of the corridor that should follow further down.<sup>234</sup> On these grounds one might conclude that the end of the corridor is not far distant, a theory supported too by the arrangement of the limestone slabs in the pavement. If we assume that they are all more or less at the same distance of 10 c., there is only room for one more. A second slab would bring us past the center of the pyramid, which is about 9.5 m. distant from the point reached in the corridor.

In the pyramid of Amenemhat I (pl. 89E), the entrance corridor seems to run exactly on the north-south axis of the pyramid and to lead into a system of interior rooms placed precisely in the center.<sup>235</sup> In the pyramid of Senwosret I, however, the corridor deviates noticeably to northwest-southeast. This irregularity may give us a clue to the arrangement of the burial chamber, which we still do not know. In pyramids with a similar deviation in the orientation of the entrance corridor,<sup>236</sup> the reason for the arrangement can be determined. If the general rule called for the pyramid entrance in the middle of the northern façade of the pyramid, the burial chamber or the sarcophagus exactly under the top of the pyramid, and the entrance from the entrance corridor into the antechamber from the north, then it was impossible for the corridor to run exactly along the north-south axis. The fact that our entrance corridor runs off-axis suggests that the burial chamber follows the system of the Fifth Dynasty pyramids and not that of the Sixth Dynasty<sup>237</sup> or of Amenemhat I. It also suggests that care was taken to place the burial chamber of the king exactly in the center of the pyramid, permitting us to estimate the distance between the chamber and the lowermost point reached in the passage. The horizontal distance would therefore be about 7 m. to the entrance of the chamber. The level of the burial chamber can also be estimated. If our calculation that the ground water level has risen 4 m. since the construction of the pyramid is correct, we may reconstruct the ancient water level

<sup>232</sup> Was it carelessness, shortage of granite, or even sabotage?

<sup>233</sup> This important discovery has never been properly acknowledged. The excavation report is rather superficial (G. Maspero, *Études de mythologie et d'archéologie égyptienne* I [Paris, 1893] 148; *BIE* 9 [1885] 6). Only the remains of the canopic jars have been published: George Reisner, *Canopics* (CG; Cairo, 1967) 1–2 [4001–4004], 396–399 [5006–5018], pl. 68; they comprise altogether the remains of four lids with human heads and 81 fragments of the vessels. The present location of the other objects is unknown.

<sup>234</sup> We found the globular handle of the sarcophagus lid and two carefully polished granite fragments of the sarcophagus or canopic chest in the sand, indicating that the lower end of the passage must have been open at the time the robbers were active there. They would have come out of the burial chamber from below, since the upper part of the passage was blocked until 1882.

<sup>235</sup> See the plan in *BMMA* 17, Dec. 1922, II, 5, fig. 1, here pl. 89E.

<sup>236</sup> For example, Neferirkara, Niuserra, and Djedkara. Sahura's passage is too ruined to be exactly measured.

<sup>237</sup> The available plans of the corridors of the pyramids of the Sixth Dynasty are too schematic to include such deviations.



as -25.20 m. NN.<sup>238</sup> The foundations for the burial chamber were certainly not laid in the ground water, but higher. The minimum distance would bring the floor of the burial chamber to about -23.0 m., as drawn in pl. 90D. It could, however, be as much as one meter higher, and thus much closer to the point reached in the sloping corridor.

The close proximity of the ground water in ancient times prevents the assumption of a vertical shaft leading into the burial chamber similar to that which was found in the pyramid of Amenemhat I (pl. 89E).

The developments in construction technique which took place between the pyramid of Amenemhat I and that of Senwosret I cannot fully be understood before the exploration of the funerary apartments of these pyramids and before a proper study of the architecture of the pyramid of Amenemhat I is undertaken.<sup>239</sup> For that reason one may draw only some preliminary conclusions.

The first concerns the building material used in both pyramids. It is well known that the pyramid of Amenemhat I consists to some degree of re-used material.<sup>240</sup> The floor, the walls, and perhaps also the roof of its corridor are formed of granite elements, parts of the mortuary temple of Chephren. Core blocks and probably also some backing stones originate from other Old Kingdom temples and tombs. Nearby quarries for soft limestone seem to have produced building material for this pyramid as well. This collection of heterogeneous material seems to be one reason for certain inaccuracies in the construction. The supply of older material was probably exhausted—or its use considered undesirable—when the pyramid of Senwosret I was built: not one re-used block has been observed so far. One or both of these suggestions might explain why the core of the new pyramid was constructed mainly in local field stone—a material which could apparently only be produced in smaller formats, necessitating the use of the framework of internal walls described above. This sophisticated system contrasts sharply with the primitive piling up of large blocks in the pyramid of Amenemhat I. The stability of both systems, however, may have been identical. We do not know the reason why the angle of the casing was reduced from about 54°27' in Amenemhat's pyramid to 49°24' in Senwosret's. The reduction had the result that the latter pyramid, despite its considerably longer base length, reached only the height of the first pyramid. The size of the casing blocks, too, was changed. In the older pyramid, the courses seem to have been rather consistently 1 c. high;<sup>241</sup> in the later pyramid they start at 1.60 m. and slowly decrease to a height of 0.65 m. These considerably larger sizes seem to indicate an improvement in the lifting methods which allowed for the handling of heavier blocks.

As far as we can see at present, however, the most significant changes took place in the arrangement of the entrance passage and the underground apartments (pl. 89E). The opening for the entrance to the pyramid of Amenemhat I was in either the first or second course of the casing blocks,<sup>242</sup> while the builders of the later pyramid hid it under the court pavement not far from the foot of the pyramid. Both corridors are constructed in the same way, using for the floor, walls, and ceiling granite blocks that rest on a foundation of limestone blocks and are backed by more limestone masonry. The slope of the passage, however, is quite different. In the pyramid of Amenemhat the slope is only 1:5, similar to that of the entrance corridor of the pyramids at Abusir. As the burial chamber had to be far down, the difference in level was overcome by a vertical shaft, probably 11.5 m. deep—quite an unusual feature in pyramid construction. Since good limestone was to be found a few feet under the pyramid foundations,<sup>243</sup> the reason for the deep placement of the chamber, which seems to be 21 m. under the level of the pyramid court, is unclear. Was it done under the influence of new conceptions of the realm of Osiris?<sup>244</sup> The builders of Senwosret I tried to reach this deep level by a single steep corridor, but here the limestone bedrock was indeed so far down that they had no other choice. This aim, to put the chamber 24 m. under the center of the pyramid, had further consequences for the construction. The entrance cut had to be dug for the construction of the chamber and then replaced by the final entrance passage. The deep position of the burial apartments and the use of shafts or sloping passages leading down into areas close to the level of ground water can also be observed in the pyramids of Amenemhat II, Senwosret II and Senwosret III.

<sup>238</sup> The groundwater is today about -21.20 m. NN. The general assumption is that the level of the groundwater rose in Egypt about 1 m. every 1000 years (see Petrie, *Lahun* II, 6; Henri Frankfort, *The Cenotaph of Seti I at Abydos* (London, 1933) 20; *Excavations of Medinet Habu I. General Plans and Views* (Chicago, 1934) 3), while Ventre Pacha, *ZÄS* 34 (1896) 95–107, seemed to consider both 0.96 m. and 1.43 m. every 1000 years to be possible. The water table in 1925 B.C. would thus have been at -25.00 m.

<sup>239</sup> See preliminary reports: *Licht* 87–92; *BMMA* 17, Dec. 1922, II, 5, fig. 1.

<sup>240</sup> Wilbour, *Travels in Egypt* 250–251; Goedicke, *Re-Used Blocks*.

<sup>241</sup> Unpublished tomb cards (without numbers).

<sup>242</sup> See section in *BMMA* 17, Dec. 1922, II, 5, fig. 1, confirmed by other unpublished material.

<sup>243</sup> Photos such as *BMMA* 3, Oct. 1908, 185, fig. 3 show that solid limestone underlies the pavement of the pyramid court in front of the pyramid entrance. The southwest corner of the pyramid is also cut from the bedrock.

<sup>244</sup> The tendency to bury the underground chambers as deep as possible can already be observed in the tombs of the Eleventh Dynasty; see Dieter Arnold, *Das Grab des Inj-jtj.f I* (Mainz, 1971) 44, and the tomb corridors 150 m. long of Mentuhotep Nebhepetre at Deir el-Bahri.

## CHAPTER VII

# The Ka-Pyramid

Sources: Tomb cards 178–183; Letters by Lansing to his mother Nov. 3, 9, 16, 22, Dec. 6, 13, 1916; Diary Nov. 2, 15–30, 1916; *BMMA* 15, July 1920, II, 7–9, figs. 1, 4–6.  
PHOTOS: 16 L 42–44, 52–58, 67–86, 122–137, 187, 188.  
PLANS: AM 2670 (inking for *BMMA* 15, July 1920, II, fig. 4), AM 2671, 2672 (all 1:100).  
SECTIONS: AM 2673, 2674 (1:25).

### 1. The Superstructure (pls. 45–47, 98; foldouts IIIb, IV)

The mortuary precinct of Senwosret I is the only such complex in the Middle Kingdom and the last one in Egypt altogether furnished with a Ka-pyramid<sup>245</sup> in the traditional form of a subsidiary pyramid close to the southeast corner of the main pyramid. For unknown reasons the Ka-pyramid seems to have had special importance in the mortuary precinct, since it was enlarged, was surrounded by temple like structures, and contained several chambers.

All interior rooms and the superstructure were completely excavated by the Expedition in 1916–1917. Since the documentation was insufficient—there were virtually no drawings of the underground apartments—the monument was re-excavated in 1984–1986.

The ultimate shape of the Ka-pyramid was the result of changes in the building plan. Its phases of construction are summarized below.

#### PHASE P(YRAMID) O

During the time the foundations of the inner court of the pyramid were being laid, the foundations of the Ka-pyramid were being prepared 20 c. east of the main pyramid and 44 c. south of the mortuary temple. This pyramid was to be 30 x 30 c. long at the base. It was erected on a foundation layer about 40 cm. and a subfoundation 80–90 cm. deep, slightly projecting beyond the foot of the pyramid. The angle of the casing was 3.5 p. back to 7 p. or 1 c. vertical height, or 63°26'06"—a slope in accordance with that of subsidiary pyramids since that of Sahura.<sup>246</sup> This angle would have brought the height of the pyramid to 30 c. (15.75 m.). The core of the Ka-pyramid disintegrated into a shapeless mass of rotten stone. In old photographs, the masonry of medium-sized but irregular limestone blocks is still visible. They seem to be set in stepped courses with large joints between the single blocks, probably filled with mortar or sand. At this stage the small pyramid was not yet surrounded by an enclosure wall of its own, but was protected on the east and south by the enclosure wall of the main pyramid.

This situation may be deduced from a flat drainage channel running from west to east directly under the place where later, in phase I, such a separate enclosure wall was built. This groove ended in a drain of rectangular section (pl. 46 c) under the east wall of the main pyramid.

Since the paving around the Ka-pyramid has disappeared in most places,<sup>247</sup> the subfoundations can be seen. Along the southern end of the west side of the pyramid a series of four rounded holes is cut into the surface of the subfoundation slabs and between their joints. The distances between the centers of the holes are 3.0 m., 2.9 m., and 2 m. Their alignment is so irregular (up to 60 cm. out of line) that they could not have served the ancient builders for purposes of surveying<sup>248</sup> but must rather be considered as holes for scaffolding, perhaps in connection with the shaft (page 74). More noteworthy is a pit 4 m. west of the southwest corner of the Ka-pyramid (pls. 47c–d, 98a). It is 3.09 m. long, 1.05–1.32 m. wide and 1 m. deep, and was cut through the foundations and subfoundations of the court. It was closed by one or more huge slabs, as is shown by a flat-dressed zone around its mouth. Its floor is formed by the flattened surface of the *gebel*. The upper sides of the subfoundation stones are carved with a flattened slide approaching the pit from the east. On the opposite west side, a second cutting leads into a flat niche in the pavement. Long, narrow grooves—apparently cut to receive wooden beams—are visible at the narrow ends of the pit and the beginning of the slide in the east.

It is difficult to guess why this pit was made. It is certain that it could not have housed a coffin, because its interior height was insufficient. If we are correct in explaining the grooves around the pit as slides for roof blocks, one would have to assume that about two-thirds of the pit was closed soon after its construction and that only the last part in the north was kept open until the last roof block was pushed in. The object(s) it held could have had a maximum size of 0.50 x 1.00 x 3.00 m., but could (in case they were deposited afterwards) not have been rigid or made in one piece, because it could not have been squeezed under the ceiling slabs when they were in place.<sup>249</sup>

<sup>245</sup> See the discussion of the question of Ka-tombs in the Twelfth Dynasty in Arnold, *Amenemhet III* 99–103.

<sup>246</sup> The batter is normally given as 62–65°; see Maragioglio, *Piramidi* VII, 104.

<sup>247</sup> Astonishingly enough, this monument has not suffered much since its excavation in 1916–1917. Only the southeast corner of its enclosure wall and the pyramid core seem to have been in noticeably better condition.

<sup>248</sup> The similarities to the holes around the pyramids of Giza (see following footnote) are striking, but with the difference that they were not cut into the *gebel* surface but added only later, after the foundations were laid out.

<sup>249</sup> I discussed this question with Mark Lehner, who connects the pit with an otherwise unknown installation for measuring or with the trenches he studied around the four corners of the pyramid of Chephren, which also could have been used for measuring purposes: see Mark Lehner, *The Pyramid Tomb of Hetep-Heres and the Satellite Pyramid of Khufu* (DAI Sonderschrift 19 Cairo, 1985) 54–56, fig. 13, and *JARCE* 20 (1983) 23–25, figs. 1–3. There are so many deposit pits at Lisht, however (see page 87), that one cannot exclude the possibility that it was a deposit pit as well.

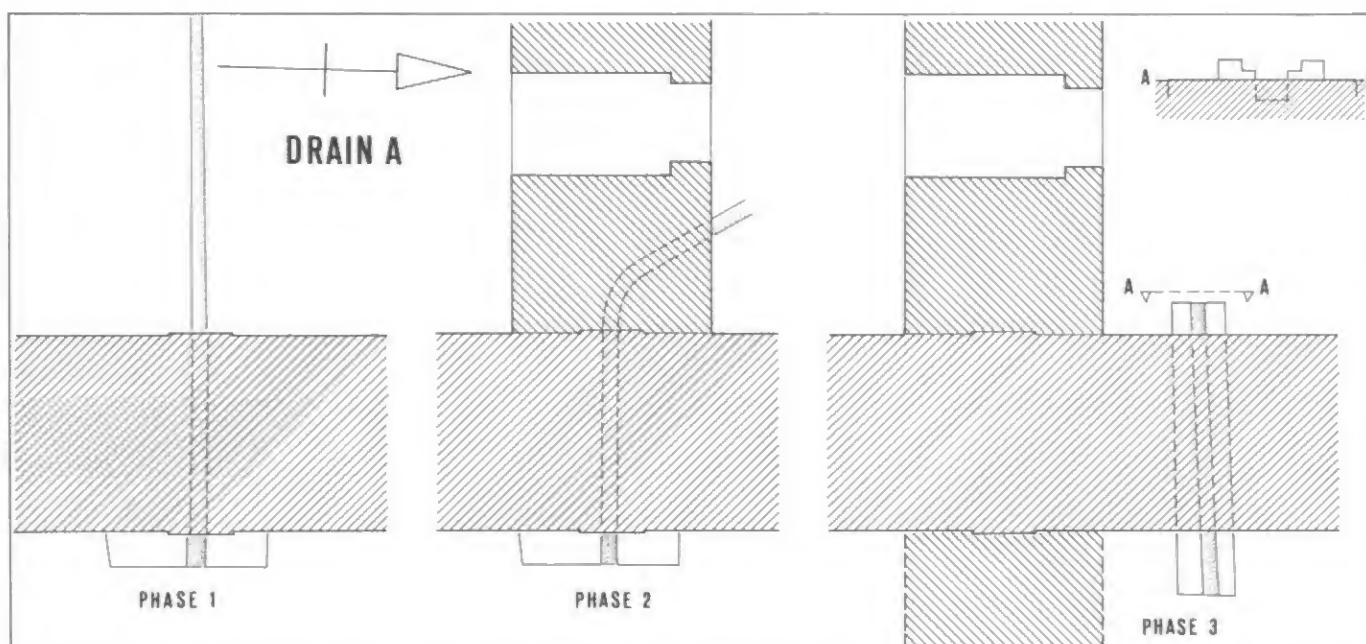


Fig. 28. Reconstruction of three phases of drainage installations at northeast corner of the Ka-pyramid court. Scale 1:100. See pl. 46d.

#### PHASE P(YRAMID) 1

In a later phase of construction the Ka-pyramid was surrounded by an enclosure wall of its own, running from east to west and north to south, creating a court measuring 53 c. east to west by 48 c. north to south. This court could be entered by a small door in the north wall, where the groove for the insertion of the door is still preserved in the pavement (pl. 46b). The drainage channel of the inner court of the main pyramid mentioned above was covered by the new north wall, with the result that a new system had to be installed. The water from the inner court of the main pyramid now collected in the southeast corner of the court to flow through a diagonal channel into the old outlet. At the same time, the original drain from the west was blocked. The new wall lies 8 c. from the pyramid in the west, 15 c. in the north and east, and only 3 c. in the south. This irregular spacing left sufficient room to build two chapels, one to the east and one to the north of the structure. It must be kept in mind, however, that this spacing was not planned from the beginning, but was simply the result of the placement of the Ka-pyramid in relation to the main enclosure wall. One would therefore hesitate to reconstruct eastern and northern chapels, buildings that do not have predecessors at the Ka-pyramids of the Old Kingdom. The few remaining paving slabs in the center of the north side of the pyramid show no traces of any such structure.

The new north wall of the Ka-pyramid court would probably have joined the east wall of the main enclosure at a spot where the hawk panel S 49 (see page 59) would be expected; this panel would have been completely walled in. Hawk panel S 37 (inside) was also affected by the addition of the enclosure wall of the Ka-pyramid (page 62) which covered the eastern edge of the panel when it was still in the shape of a projecting boss. This observation dates the construction of the later wall and with it, phase P 1 of the Ka-pyramid to a period when the inner enclosure wall of the main pyramid was already built but its decoration not yet executed—that is, to a relatively late stage of the building activities.

#### PHASE P(YRAMID) 2

At some later date, the level of the court of the Ka-pyramid

was raised and the pyramid itself enlarged. While the existing level was roughly equal to that of the main court, for some reason a higher level was considered desirable and was achieved by adding two layers of paving slabs to the existing ones. These slabs were pushed against the sloping casing stones of the pyramid. This method was not, however, used along the foot of the enclosure walls, where instead the inner half of the walls was taken down and the new paving was pushed against the remaining half. Then the inner half was re-erected and connected at the top to the original portion. During this curious operation, one old top stone with its curved surface was built into the pavement under the western wall (foldout IIIb [C]).

The only convincing explanation for the procedure is that raising the floor in the court would have covered the lower ends of the hawk panels of the main wall and possibly of the Ka-pyramid walls. As recutting the panels—perhaps with smaller fecundity figures—could not be carried out in a satisfactory way, the whole inner half of the walls was taken down and replaced with fresh stones on which new panels could be carved. In these new panels, the decorative scheme could have been changed in a way to cope with the new, lower height of the walls.

Another unsolved question is whether the north and west walls of the court of the Ka-pyramid, which had been added in phase P 1 were decorated with such panels at all, either in phase P 1, or later, in phase P 2, after the floor level was raised. Because the wall blocks have completely lost their original surface, it is very difficult to discover any trace of such panels. Such traces may exist at the north end of the inside of the west wall, where a flat projection is visible.

The Ka-pyramid itself was enlarged during or after the raising of the floor. Against the northern and western faces of its casing, two more layers of stone were added, one layer of casing blocks and one of backing stones. Together they were 5 c. thick, so that the pyramid now had a base of 35 x 35 c. and a height of 18.375 m. These new dimensions harmonized better with the size of the main pyramid. In the Old Kingdom, the proportion was 1:5 (30 c. Ka-pyramid, main pyramid 150 c.<sup>250</sup>); the

<sup>250</sup> Lauer, *Ounas* 55 n. 3.

pyramid of Senwosret I, with a base length of 200 c., would have required a Ka-pyramid of 40 c. The fact that the Ka-pyramid of Senwosret I was not enlarged to that size, but only to 35 c., could mean that its enclosure wall had already been built and did not permit such an extension. In that case, the enlargement of the Ka-pyramid would not have been part of the program of raising the floor level, but an undertaking separate from and later than phase P 2.

Because the new court of the Ka-pyramid was considerably higher than the surrounding pyramid court, its rainwater drained into the main court, at least in the north and west. Both drainage systems still exist. One is nearly completely preserved in the west wall and the Ka-pyramid court (foldout IIIb [c]); the other remains unexcavated but visible under its northern wall.

Another result of raising the floor level was that one or two steps had to be built between the new level and the lower level of the court of the main pyramid at the doorway between the two courts. This certainly created a problem because it was necessary to compensate for the loss of height by raising the architrave correspondingly—not an easy task, because the sloping faces of the wall quickly diminish its thickness.

The completion of phase P 2 might have been celebrated by the burial of deposits in the court of the Ka-pyramid. One such deposit pit is preserved in the corridor between the Ka-pyramid and its western enclosure wall (pls. 47b, 98b). It is similar to other pits in the court of the pyramid temple (page 44) and elsewhere (page 92), and was certainly not built together with the pavement, but subsequently cut into it.

The Expedition uncovered a large area east of the Ka-pyramid in the outer court of the main pyramid that is still covered with the irregularly shaped slabs of a subfoundation for an unknown building. This construction might have been in line with the Ka-pyramid and might even have adjoined the east face of the inner enclosure wall in front of it. This construction must have been a building in stone and was certainly a temple. It could have been either a part of the Ka-pyramid complex or an independent temple, perhaps the sanctuary of Hathor that is believed to have existed in the temple area<sup>251</sup> but which has not yet been found.

## 2. The Underground Apartments (pls. 48, 97, foldout V)

The Ka-pyramid stands on subfoundations of large slabs of poor local limestone that precisely follow the foundations of the pyramid and differ from the subfoundations of the court around the pyramid. They are laid directly on the *gebel* surface, and surround the core of the pyramid. This core consists of rough local limestone of such poor quality that today only an amorphous mass of slaty limestone survives.<sup>252</sup>

The subfoundations also covered the mouth of the main shaft of the pyramid, near its southeast corner. This fact indicates that the shaft and its chambers must have been built earlier, before its mouth was covered by the pyramid.

The main shaft of the Ka-pyramid was found in 1916/1917 inside the southeast corner. It was still covered by the huge slab that had bridged its mouth but apparently cracked when tomb robbers dug a tunnel under it from the south side. The shaft is exactly 3 x 5 c. wide and 17.85 m. deep. Its perfectly vertical walls are carefully cut.

From the floor of the shaft, two corridors lead into single chambers on the north and south, both erected on limestone slabs with limestone walls and ceilings. The southern chamber is 2 c. wide; it was intended to be 5 c. long, and its ceiling height is 1.42–1.44 m. (2 c. 5 p. = 1.425 m.). At its far end is a niche 1 c. 4 p. deep and wide, and 1 c. 5 p. high. This niche is similar in size to a canopic niche, but its position at the narrow end of the chamber shows that it is not a canopic niche, but must have housed some other object. In the center of the room, the axis is scratched into the floor slabs. The front roof slab is missing and was obviously never in place. The entrance was probably intended to be walled up by two more slabs.

The chamber opposite on the north is slightly larger at 1.18 m. wide (2 c. 2 p. = 1.20 m.), 3.60 m. long (6 c. 6 p. = 3.60 m.) and 1.54 m. high (2 c. 6 p. = 1.50 m.). This chamber has no end niche. The roof is complete, but the closing slabs of the entrance were never installed. There seems to have been a slight alteration during construction: two north-south setting lines on the floor slabs indicate that the northern chamber was planned 5 cm. more to the east but was shifted to the west. The axes of the north and south chamber are, however, exactly aligned.

The two chambers were apparently not completely finished when the progress of the building activities above ground required the shaft to be closed and its mouth leveled. In order to keep the lower part of the shaft empty and the connection between the north and south chamber open a lid was built into the shaft about 9.9 m. below the *gebel* surface. This lid separated the upper part of the shaft, which could be filled in from the lower part which had to be kept open. The lid consisted of two huge limestone slabs, 77 and 82 cm. thick,<sup>253</sup> placed in a slight, niche-like widening of the shaft at a place where the *tafl* changes into harder material that looks like a soft limestone (foldout 5 block A and B). Since the niche had to be larger than the stones placed in it, a gap exists between wall and lid that was filled with larger limestone fragments with a smooth end surface, and four larger granite pieces, one of them having a dressed surface.<sup>254</sup> The Expedition removed the southern block during the excavation, and found the lower part of the shaft still empty as the builders had planned it.

For some unknown reason access to the two chambers had to be provided or regained after a lapse in time and a new access shaft had to be cut. This shaft started in the northern court of the Ka-pyramid, slightly east of its center. The connection between this shaft and the chambers seems to have been a problem, however. Perhaps the builders could no longer calculate the exact position of the chambers; or they tried to avoid cutting into the north chamber and aimed for the corridor connecting the north chamber with the old main shaft. The new shaft therefore ends at a depth of 14.75 m. and becomes a slightly sloping corridor to the south.

Two small tunnels, opening 5 and 11 m. from the head of the sloping corridor, were dug toward the east; neither was successful in reaching the northern chamber, which was still

<sup>251</sup> See footnotes 32–33.

<sup>252</sup> Photos such as 16 L 73–76 suggest rough courses arranged in steps.

<sup>253</sup> On the north and south sides, the blocks show three vertical grooves for the ropes which were slung around them when lowered into position. This observation is important, since it clearly shows that heavy weights (5 tons) could be lowered on ropes.

<sup>254</sup> It must be assumed that at the time of the construction of this roof, some already finished monument of granite was broken into pieces and re-used as building material. There is no further evidence for such a monument.

deeper than anticipated. Only when the miners were digging a vertical shaft in the second side corridor did they feel that the chamber was close by, and in order to avoid damaging it they returned to the sloping corridor and dug down along a steep slope until they broke through the rock in front of the entrance of the chamber. Apparently the last stage of operations caused difficulties for the workmen who moved the rubble; they inserted a beam into the side walls of the sloping corridors to fix a rope for hauling the debris.

The carefully cut rectangular shaft, the regular and wide sloping corridor, and the care with which a direct break into the north chamber was avoided indicate that this tunneling work was not done by tomb robbers but by official builders. But tomb robbers also invaded the Ka-tomb and removed whatever it might have contained. Nothing is left of the original contents of the chambers but a few rotten pieces of wood, which were spread out on the floor of the first trial tunnel from the sloping corridor to the east; they cannot be restored to make any recognizable object (pl. 48).

The robbers entered the underground apartments in the following way. A first, trial tunnel, dug by them from the upper part of the main shaft in the direction of the pyramid core, was given up for obvious reasons. Astonishingly enough, the robbers did not dig down into the main shaft, but left it untouched. Their other attempt from the north was more successful. They dug a tunnel, probably from outside the northern enclosure wall, into the mouth of the north shaft and then went down. The reason for the detour is unknown. Did some heavy obstruction—perhaps an entrance chapel with an altar—force the

robbers to adopt that approach? These robbers either removed the contents of the chambers without leaving the slightest trace, or found the chambers already empty, perhaps because the tomb had been left unfinished by the builders. The latter alternative seems less likely, because the builders had taken so much trouble to construct a proper Ka-pyramid, and had also dug a second entrance, apparently in order to finish the tomb and keep it accessible until the chambers could be filled. Alternatively, could the builders have dug the second entrance in order to remove the contents which were already there but were thought unsuitable for the Ka-tomb?

Unfortunately we can no longer answer these questions and cannot guess what the contents of the underground apartments of the Ka-pyramid were. Perhaps one chamber housed the Ka-statue of the king within a shrine like that of King Wahibra Hor<sup>255</sup> and the other chamber housed the canopic box of this burial, similar to that found in the Ka-tomb of Amenemhat III at Dahshur.<sup>256</sup> There is also the possibility that one of the chambers was added to contain unknown deposits. The complicated arrangement and building history of the Ka-pyramid of Senwosret I proves how important that monument was to the builders of the mortuary complex of the king.

<sup>255</sup> D. Morgan, *Dahchour I*, 91–93, figs. 211–216, pls. 33–35. Size of the naos: 0.68 x 0.92 x 2.09 m.

<sup>256</sup> Arnold, *Amenemhat III* fig. 29, pl. 25d.

## CHAPTER VIII

### The Entrance Chapel

(pls. 49-57, 99-102)

Sources: Lisht Journal I, 68-93, 116; *BMMA* 28, Nov. 1933, II, 6-9, figs. 3, 5-8; *BMMA* 29, Nov. 1934, II, 9-26, figs. 16-24.  
PHOTOS: L 32-33, 86-88, 105; L 33-34, 203, 261, 266.  
References to blocks A-J refer to list on pages 81-82 and pls. 100-101.

In the course of clearing the north side of the pyramid—a task undertaken in 1932/33 and 1933/34—the Expedition encountered several elements of the architecture and many fragments of the relief decoration of the entrance chapel of the pyramid. Such a building was to be expected, as it had been a standard element of a pyramid complex since Djoser and Snefru.

These pieces were found in and around the hole in front of the pyramid entrance, and were concentrated about 5-20 m. west of the entrance (fig. 29). Most were found directly on the surface of the pavement of the inner court, where they had been thrown when the chapel was dismantled. Their position shows that the chapel was taken down fairly soon after it was built, because little debris had accumulated on the floor and no casing blocks of the pyramid had fallen onto it. The destruction must

therefore have taken place rather early, and probably in connection with the opening of the pyramid entrance by robbers. Blocks of the chapel were found mixed with parts of the inner enclosure wall, which must also have been destroyed during that activity. Only a small part of the original material is preserved, however, and we must suppose that the missing blocks were also removed at a rather early stage, before the debris of the pyramid could cover them.

It is clear that the chapel had already been planned by the time the pyramid was under construction, because its casing stones were set to form a niche for the back wall of the chapel. Furthermore, a fragment of a torus block (G on pl. 101) shows that the surface of the casing was left bosselated in order to facilitate joining with the walls of the chapel. The niche is exactly in the center of the north face of the pyramid, as is the entrance corridor that passes under it. Because the corridor does not run parallel to the north-south axis of the pyramid, however, the actual mouth of the corridor in the court pavement lies not on the axis of the niche, but 50 cm. to the west, where it would have been partially covered by the chapel wall. This unforeseen obstacle to the transport of the mummy and the subsequent insertion of the huge blocking plugs was avoided by shifting the chapel to the west of the niche axis.

Unfortunately, the pavement of the inner court and the casing of the pyramid are so badly damaged around the pyramid entrance that no traces of the chapel are left. There is one small exception, however: at the foot of the first casing block west

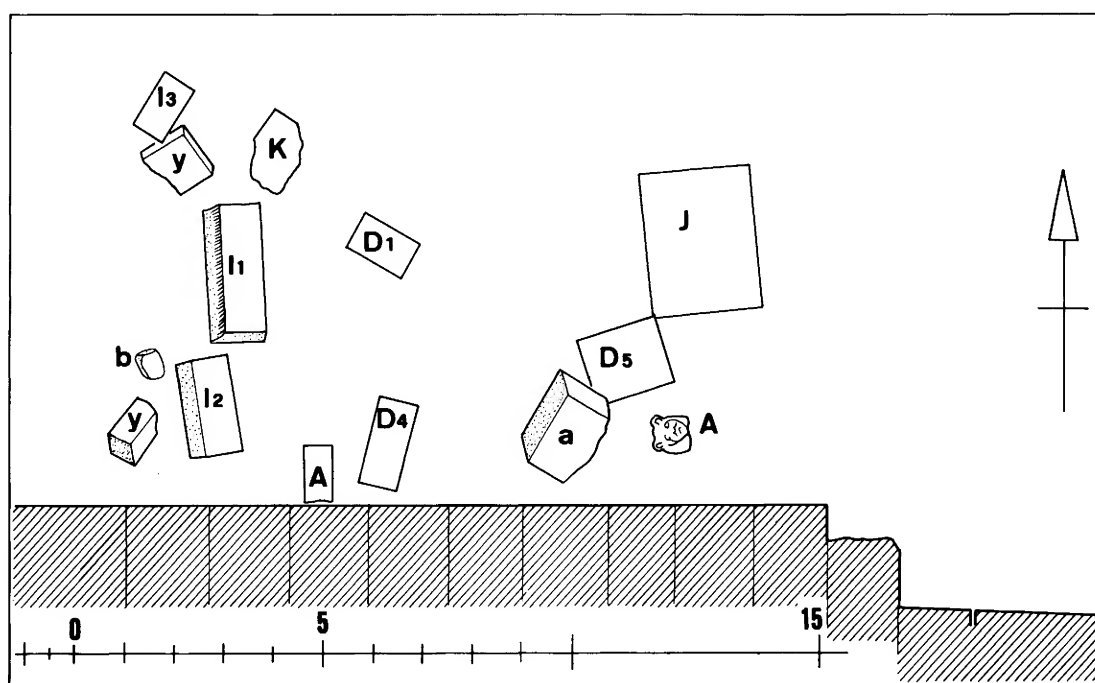


Fig. 29. Sketch of position of blocks of the entrance chapel as found in 1932/33. Scale 1:150. See pl. 52a.



of the chapel, the slope of the casing was not chiseled to the eastern edge of the block, but only to the mark “-0.23” in pl. 91. This fact might indicate that the pavement was covered here by the west wall of the chapel and that the mason had to stop his work at the corner between the casing and the chapel wall. This block preserves the only indication of the position of the chapel; the reconstruction of its plan therefore depends on the preserved elements of its architecture and decoration.

## 1. The Architecture (pls. 52, 57, 99–102)

Sources: For photos of single blocks see list on pages 81–82  
DRAWINGS: AM 2638–2645, 2647 (all 1:20); AM 2637 (reconstruction for *BMMA* 29, Nov. 1934, II, fig. 17); AM 2646 (1:40, for *BMMA* 29, Nov. 1934, II, fig. 18).

The reconstruction of the connection between the chapel and the pyramid slope is based on block J, which bears a triangular recess identical with the angle on one of its short sides. Because of its huge size (it was even larger before it was cut down by stone robbers) it must have rested directly on floor level and, as the triangular area shows, with its short side against the first casing block in the east. The excavators assumed that the block

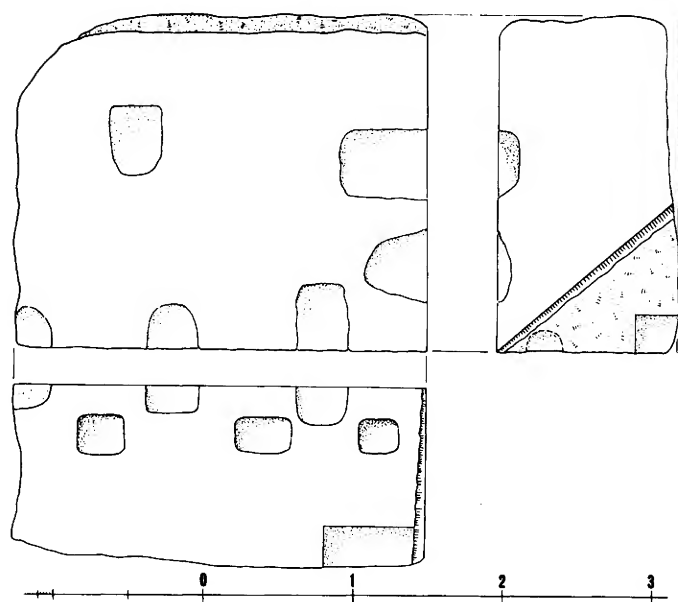


Fig. 30. Block J of entrance chapel. Scale 1:50. See pl. 52c.

is too heavy to have been turned over by the stone robbers, and that its upper surface must still be in its original position. If their assumption is correct, the block would have reached 1 m. into the niche and would have protruded  $1 + x$  m. out of it. Another block would have filled the back part of the niche. Block J would have reached so far into the inner court that it must have been part of a socle 1.2 m. high on which the chapel stood. This is the way the Expedition reconstructed the chapel.<sup>257</sup> This reconstruction is in accord with the entrance chapel of Khendjer,<sup>258</sup> which stood on a socle 0.56 m. high. On the presumed upper surface of block J and along the upper edge of its back side there are, however, about 8 pry-holes that could

only have been used when the block was originally lying with its upper face down. Its now-invisible lower surface would have been on the top and might still show traces of the east and south walls of the chapel (pl. 99 c). In that position, the block would have filled the niche and would not have protruded into the court. Block J, therefore could only have been the base of the alabaster stela and the back wall of the chapel. The western half of the block that was cut away by the stone robbers would have filled the remaining space of the niche and would have given the block a size of 1.2 x 2.15–2.25 x 4.25 m. and an approximate weight of 28 tons.

The chapel would still have enclosed the entrance of the corridor. We do not know how the corridor entrance was constructed, but if it resembled the plan suggested on plate 38, it could have been kept open until the death of the king, and the long blocking-plugs could have been inserted from outside. Smaller floor blocks, covered by a huge granite altar, could have hidden the entrance. The alabaster stela, fragments of which have been found (see page 79), may have stood on a 1.2 m. high base aligned with the foot of the pyramid casing, but there is no proof for its placement, or for the position of the other short wall of the chapel in the north. If we assume that the entrance wall had the same width as the side walls (2 c.; see below) and that the length of the chapel was a round sum, the distance from the stela (at the foot of the pyramid) to the outside foot line of the chapel in the north can be estimated as 10 c. The width of the chapel is more certain, since we know that the blocks of the side walls were probably 2 c. thick and we can calculate the position of the walls from the size of the niche and the undressed block at the outside southwest corner; the width would also have been 10 c. To reconstruct the height of the walls, the Expedition used the decreasing width of some decorated wall blocks with vertical inner sides and an outside batter of about 1 p. in 6 c. At ground level they are 1.05 m. wide, and they narrow to 0.9825 m. near the ceiling. The main difficulty for this reconstruction is, however, the fact that we have no indications of the height of the dado. If we assume that it was 1.20 m. high, enough to carry the lowest register of relief over the protruding socle of the stela, the overall height of the walls inside can be calculated as 7 c. (3.675 m.; the Expedition estimated 3.90 m.)

The walls rose in irregular courses of bondstone, outer faces smooth and inner decorated. They carried a course of blocks with a torus at the outer upper edge; see the list of architectural blocks and fragments below. Eight are completely or partly preserved in addition to the blocks of the northeast and northwest corners. This course did not extend across the full thickness of the wall, and there is enough space behind it to accommodate the ends of the ceiling slabs. Part of one ceiling slab was preserved. It was 0.52 m. thick and 1.93 m. wide; much of its undersurface had flaked off, but remains of the star decoration in relief were still visible. The original length of the block would have been about 4 m. The torus blocks and the ends of the ceiling blocks carried the cavetto blocks, four of which were recovered (I1–I4), together with the northwest corner cavetto block (H). These and the underlying torus blocks show that only the north front of the cornice was decorated, while the longer sides of the chapel were plain. Behind the cavetto blocks we must reconstruct a course of roof slabs of which nothing

<sup>257</sup> *BMMA* 29, Nov. 1934, II, figs. 17–18.

<sup>258</sup> Jéquier, *Deux pyramides* 15–18, pls. 2, 5.

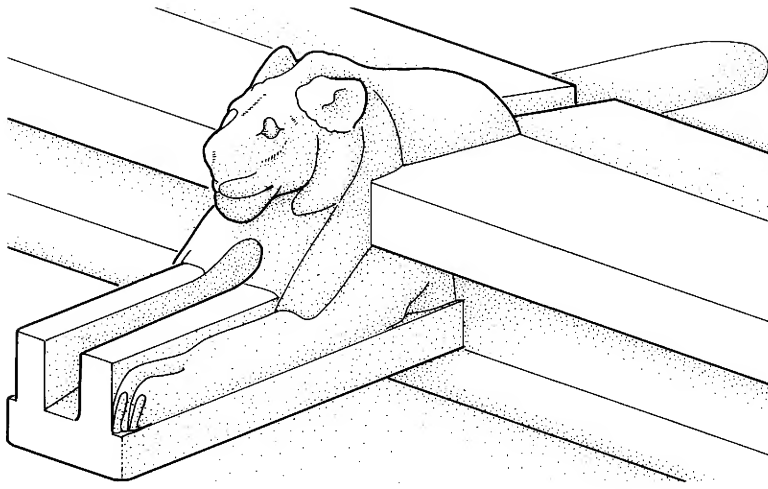


Fig. 31. Reconstruction of lion's-head spout on roof of entrance chapel.  
See pls. 57, 101.

remains; their tops would have had a slight gable that sloped to the east so that rainwater would drain against the back of the cavetto blocks and from there into the spouts, one of which is preserved (Egyptian Museum Cairo JdE 63 941: fig. 31, pls. 57, 101).

## 2. The Decoration (pls. 49–51, 53–56)

Sources: For photos of single blocks and fragments see list on pages 78–80  
DRAWINGS: AM 2648–2650 (1:10); AM 2651 (drawing for *BMMA* 29, Nov. 1934, II, fig. 19); AM 2653 (pencil drawing of block MMA 34.1.201); AM 2654–2657 (1:10); AM 2658 drawing for *BMMA* 29, Nov. 1934, II, fig. 20.  
References to fragments a–z refer to list on pages 78–80 and pls. 100–101.

The interior decoration of the chapel is illustrated by 36 fragments or groups of fragments of raised and painted relief which show that it fully conformed to the decorative scheme of offering halls of mortuary temples. The best preserved material, from the complex of Pepi II, is of great value for the reconstruction of our entrance chapel.<sup>259</sup>

Because of the small size of the entrance chapel, its scheme of decoration had to be simpler than the much larger and more elaborate program of reliefs of the offering halls. Only two blocks of the entrance wall are left (z, y). Block z shows that the two relatively narrow sections of the wall were decorated with scenes of butchering, but the number of registers cannot be reconstructed. One register probably filled the entire length of the wall above the entrance and the slaughtering scene; it was richly decorated with representations of offerings and capped with the usual *kheker*-decoration. The south, back wall was occupied by the alabaster stela, a few small fragments of which were still preserved. On the basis of the space available, it can be estimated that the stela was not more than 3 c. wide and 4 c. high. It was painted and topped with the usual cavetto molding; no traces of its inscriptions were found. On both sides of the stela about 0.70 m. of the wall was visible and decorated with a procession of gods arranged in three registers of three each, forming, so to speak, two enneads. The preserved inscrip-

tions and fragments of the gods do not allow us to identify them. This scheme of decoration on the back walls of the offering chapel is comparable to the stela wall in the offering hall of Unis,<sup>260</sup> where the jackal- and falcon-headed *h3w* face each other. Both side walls show the same theme: the king, with his Ka standing behind him, is seated at the offering table; the offering list is above him, and priests and offering bearers approach him. There are important variations in the arrangement of the scenes, but too little material is left to determine these differences precisely, especially with respect to the disposition of priests and offerings. One may perhaps suppose that the slight differences in the arrangement of the two offering lists are connected with the different representations at the north ends of the side walls, where the spaces between the offering lists and the ends of the wall must have been unequal.

The list of the east wall was arranged in four registers. The top contained items 1–28 of the opening-of-the-mouth (Barta Type B)<sup>261</sup> and items 1–8 of the great ritual offering list (Barta Type A). The second register contained items 9–47, the third, 48–73, and the fourth, 74–95 of that list. The last register must therefore have been shorter than the three upper ones.

The list on the west wall did not belong to this regular type or share its arrangement. It too started with the list of the opening-of-the-mouth (Barta Type B), which apparently filled the first register completely, for the second register starts with item 1 of the great ritual offering list. In this second register we find items 28–31; we must ask how this can be explained, since the list of the opening-of-the-mouth normally consists of only 29 items. Whatever the reason, the existence of the extra entries makes it impossible to estimate the length of the list or its northern end. The reconstruction of the wall is further complicated by the fact that the last register is eight squares short at the front (south). Thus, there would never have been enough space for the great ritual offering list with its normal 95 items. Only 80 could be accommodated in the arrangement presented in our drawing (pl. 56).

In spite of their poor state of preservation, these two lists are important examples of royal offering lists of the Middle Kingdom<sup>262</sup> and seem to confirm the general observation that the builders of the pyramid complex of Senwosret I must have been well acquainted with the monuments of the Sixth Dynasty. The disposition of the offering lists and of the other representations on the chapel wall excludes the possibility, however, that the decoration was copied from the offering hall of Pepi II, the only well-preserved example of the Sixth Dynasty.<sup>263</sup>

### LIST OF RELIEF FRAGMENTS

The numbering system is that of the Expedition.

#### A. NORTH WALL (PLS. 51, 55)

##### x. Discarded

Photo L 33–34, 423.

Small fragment of base line from left and of lower register?







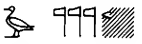

<sup>259</sup> Jéquier, *Pepi II*, II, pls. 61–104.

<sup>260</sup> Lauer, *Ounas* 51, figs. 35, 97–100, documents 50–52.

<sup>261</sup> Winfried Barta, *Die altägyptische Opferliste*, *MÄS* 3 (1963).


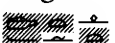







<sup>262</sup> Winfried Barta, *Die altägyptische Opferliste*, *MÄS* 3 (1963) 97–98.

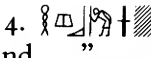
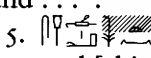
<sup>263</sup> Jéquier, *Pepi II*, II, pls. 61–104.

- y. MMA 34.1.202  
BMMA 29, Nov. 1934, II, 29, fig. 23.  
AM 258.  
Photo: L 33-34, 406.  
Found west of pyramid entrance (fig. 29[y], pl. 52a).  
L. 1.90 m.; H. 0.66 m.  
Lintel of entrance of *kheker*-decoration and one register showing offerings. Probably joined on all sides (complete block). Brilliantly colored when found, only a few traces of color now preserved: *kheker* bl.-gr.-r., sky and base line bl., baskets and mats gr., stand r., vessels y., bulls' heads and all meat r., duck body and legs bl., wings r., cucumber and leeks gr. and y., figs y. and dark red. Background bl.?
- z. Discarded  
Photo: L 33-34, 409.  
Remains of two registers of slaughtering scenes with right end of decoration (and block?).  
Inscriptions:  
  
  

- B. SOUTH WALL (PLS. 51, 54)
- aa. Cairo 63 946  
BMMA 29, Nov. 1934, II, 19 n. 40; 24, fig. 22.  
Photo: L 33-34, 408.  
Procession of a nome god, a form of the dog-headed Anubis or Upwawet, and possibly the god Amun (to judge from his double-plumed headdress). Complete block with joints on all sides (?) with remains of inscription  and .
- bb. Cairo 63 946  
Photo: L 33-34, 417.  
Part of a dog-headed form of Anubis from left end of wall. Drawn by the Expedition with joints left and on top.  
End of inscription .
- cc. Cairo 63 946  
Photo: L 33-34, 423.  
Remains of inscription: .  
*Gb ntrw* " . . . [Geb?] gods."  
No joints.
- dd. Cairo 63 946  
Photo: L 33-34, 423.  
Legs of god from right end of wall and remains of inscription in lower register  
"  [Thot?] *nb-Hmnw*." No joints.
- NN. Lisht  
Photos: L 84, 209, 213, 214.  
Found 1984/85 in retaining masonry of tomb robbers in pyramid entrance.  
L. 32 cm. H. 11.5 cm.  
Remains of procession of god and goddess. Joints top and below.
- NN. Discarded.  
Lisht Journal I, 73.  
Found in debris covering pyramid entrance and west of it. Fragment of torus of a stela of coarse grained calcite (alabaster). Painted y. with bl. lashing. According to the drawing, the diameter is not more than 7.5 cm. More

chips, some with smooth surfaces. On tomb cards 662-663 three painted fragments of an alabaster cavetto and torus molding are drawn and described, but no findspot is mentioned ("Old material"), so that a connection with the entrance chapel cannot be established.

#### C. EAST WALL (PLS. 50, 53)

- o. MMA 34.1.201  
L. 0.92 m.; H. 0.37 m.  
Photos: L 33-34, 412.  
Part of Horus-name '*nh-mswt* of king and right end of offering list. Remains of second, third and fourth registers with items 76-77 of great ritual offering list. Drawn as if joint below.
- p. Discarded  
Photo: L 33-44, 518.  
Remains of reed decoration of offering table and bulls' head from food offerings. Drawn by Expedition with joint left.
- q. Discarded  
Photo: L 33-34, 417.  
Part of left arm of Ka-figure standing behind king with south end of wall and remains of text  
 " . . . all [living Kas]". No joint.
- r. Discarded  
Photo: L 33-34, 403.  
Four fragments from offering table and feet of seated king with remains of inscription:  
 *[dbht] htp* "funerary meal"  
 "a thousand of [bulls, beer and bread]"  
 "a thousand of ducks, linen and clothing".  
Drawn by Expedition with joints right and top.
- s. Discarded  
Photo: L 33-34, 419.  
Remains of upper register of offering list with items 26-38 of list of opening-of-the-mouth and with item 1 of the great ritual offering list.  
Drawn by Expedition with joint right.
- u. Discarded  
Photo: L 33-34, 411.  
BMMA 29, Nov. 1934, II, 20 fig. 19.  
AM 2651.  
Remains of two registers of offering priests, two kneeling; at left end broom of "bringing the foot," below the  *hry-hbt* proclaiming the offering  (*htp ntr*).  
Drawn by Expedition with joint top and left.
- t. Discarded  
Photo: L 33-34, 413.  
Left and second register of offering list with items 38(?) - 47 of the great ritual offering list.  
Drawn by Expedition with joint right.
- v. Cairo JdE 63 945  
BMMA 28, Nov. 1934, II, figs. 18-19.  
Found west of pyramid entrance, on pavement. Two large and five smaller, connecting fragments of procession of seven offering bearers carrying bulls' forelegs, poultry (also in baskets), a calf, and leeks. Lowest register with 12 cm. of top of dado. The titles of the priests are:  
1.  *smr w'ty* "sole companion".  
2.  *hry-hbt hry-tp* "chief lector priest".  
3.  *sm* . . . "sm-priest. . .".

4.  *hry-hbt wr jmy*. . . “chief lector and . . .”  
 5.  *smr w'ty nsw* . . . *tp* “sole companion and [chief attendant?] of the king”.

Drawn by Expedition with joints left and below.



w. Discarded

Photo: L 33–34, 423.


Feet of offering bearer with cage of ducks.

ff. Cairo JdE 63 946

Photo: L 33–34, 410.

Remains of procession of three genii carrying *hs.t*-vessels and *w3s* on their *htp*-mats. Name of first  *Df*, of second  *Hw*, while the third is lost and might have been *Npr* or *Htp*.<sup>264</sup> Was misplaced in first reconstruction (*BMMA* 29, Nov. 1934, II, 20, fig. 20), but correctly allocated by Henri Jéquier on the basis of the parallel in the temple of Pepi II, where the position of the same scene is secure.<sup>265</sup> The possibility that the genii headed the procession of offering bearers and therefore belonged to the west wall cannot be completely ruled out.

ee. Discarded

Fragment with hieroglyphs  certainly belonging to ff.

No photo, but included in reconstruction drawing of the Expedition.

gg. Cairo JdE 66 946(?)

Photo: L 33–34, 418.

Hind leg of one of the genii of ff, without direct connection.


#### D. WEST WALL

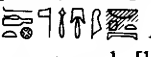
a. Cairo JdE 63 942

Photos: L 33–34, 404, 419, 435, 517.

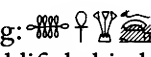
AM 2658.

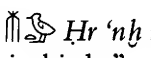
Found west of pyramid entrance slightly above pavement level (fig. 29[a]). Large block with upper part of king sitting behind offering table and his Ka standing behind him. South end of west wall. Inscriptions:


Above Wadjet:  *W3dt Dp dj.s 'nh w3s*.  
 “Wadjet of Dep may she give life and dominion”

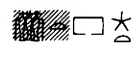
Above Horus:  *Bhdtj ntr '3 nb pt*.  
 “Behedetj, the great god, [lord of] heaven”.


Above the king:  *Hr 'nh mswt Snwsrt nb t3wy*.  
 “Horus Living-in-births Senwosret, lord of the two lands”.


Behind the king:  *s3 'nh h3.f h' hr st*.  
 “Protection and life behind him who appears on the throne of [Horus]”.

Above Ka:  *Hr 'nh mswt*.  
 “Horus Living-in-births”.

Behind Ka:  *K3 nsw hntj db3.t*. “The royal Ka, in front of the *Db3.t*-chapel”.

 *Hntj pr d3t*  
 “in front of the *d3t*-chapel”.

 *Hr tm3- 'nb jrt ht. Wn.f hntj*  
*[k3w 'nhw] nbw*.  
 “Horus with powerful arm lord of doing things. May he be in front of all [living Kas]”.

Below offering table:  *nswtj bd*  
 “Royal natron”.

Probably joints on all sides. Left end of block was covered by south wall and surface, therefore left rough.

b. Cairo 63 942


Photo: L 33–34, 404.


Reed decoration of offering table and left end of fourth register of offering list. Joints left and below. Findspot fig. 29[b].

c. Cairo 63 942

Photo: L 33–34, 404.


Several joining fragments of tail and legs of seated king, stand of offering table and inscriptions below. Joints right and top.

Inscriptions:  *dbht htp* “funerary meal.”

 1000 *t3*, [*hnkt, k3?*], 1000 *3pd*, *šsrw*, *mnht*. “thousands of bread, [beer and oxen?], thousands of ducks, linens and clothing.”

d. Cairo 63 942

Photo: L 33–34, 517.

Small fragment of hieroglyphs  from below offering table and remains of inscription of register below. Joint right.

e. Cairo 63 942

Photo: L 33–34, 517.

Small fragment of head of ox from inscription below offering table.

f. Cairo 63 942

Photo: L 33–34, 517.

Small fragment of offering list.

g. Cairo 63 942

Photo: L 33–34, 419.

Larger fragment of offering list from upper register with items 12–18 of list of opening-of-the-mouth.

h. Cairo 63 942

Photo: L 33–34, 419.

Smaller fragments of second and third register of offering list with items 45–49 of great ritual offering list.

i. Cairo 63 942

Photo: L 33–34, 419.

Larger fragment of right end(?) of second register of offering list with items 27–31 of great ritual offering list.

j. Cairo 63 942

Photo: L 33–34, 419.

Smaller fragment of third and fourth register of offering list with items 69–70 of great ritual offering list.

k. Discarded

Photo: L 33–34, 418.

Hind leg of offering bearer from middle register. Drawn as if joint at right.


l. Discarded

Photo: L 33–34, 423.

Part of head of offering bearer from north end of wall.

m. Discarded

Photo: L 33–34, 418.

Head of offering bearer with offerings and remains of title  from north end of wall.

n. Discarded

Photo: L 33–34, 253.

Probably leg of offering bearer from north end of wall.

<sup>264</sup> Similar: Borchardt, *Sahure* II pl. 29; Edouard Naville, *The Temple of Deir el Bahari* IV (London, 1901) pl. 110. See also *Licht* 34, figs. 30–31.

<sup>265</sup> Jéquier, *Pepi* II, II, 57, pls. 61, 66. Same from entrance chapel: *ibid.* I 2–3 fig. 1 and Bibliography.

LIST OF ARCHITECTURAL BLOCKS AND FRAGMENTS

1. Cairo 63 941 (fig. 31; pls. 57, 101)

Lion's-head spout block A

Except for the neck of the lion (missing) the spout was cut from one piece of stone. The head was broken off from the trough and found at the foot of the pyramid casing in front of the second preserved casing stone west of the entrance (fig. 29) on a thin layer of debris covering the pavement. The broken-off trough lay some distance away. The projecting legs and their base are broken off just before the shoulder and were missing.

The spout was part of the cornice and the water-channel passed through the cavetto. The water was probably collected in a flat depression cut in the roof slabs behind the lion and was carried out by a sloping channel between its paws. This arrangement differs from that of a similar lion's-head spout from the chapel of Senwosret I at Karnak.<sup>266</sup> On either side of the back of the block is a slot for a cramp cut in the *vertical* back surface to prevent the block from tipping out of place as it overhung the front. A similar slot for a cramp in the north end of cavetto block I1 indicates that this block was the southern neighbor of the spout; the northern one is now missing. The spout can therefore be placed at about the center of the south wall of the chapel roof. That there was a similar spout at the center of the east side seems to be a logical presumption, although it has now completely disappeared.

BMMA 28, Nov. 1933, II, 8–9, figs. 6–7.

Photos: L 32–33, 89, 259, 331–334, 338, 339, 340, 344.

2. Corner torus block C1 (pls. 52d, 100)

The northwest corner block of the torus was found at a spot further to the west that is not visible in fig. 29. Whereas the torus on the side is undecorated, that on the front has the usual torus lashing executed in very low relief. The back of the block with the angle for the corner and the terminal ceiling slab is irregular and roughly dressed. The other surfaces of the joints are dressed flat and covered with a thin layer of lime mortar. The top surface shows setting lines for the cavetto blocks. A strangely shaped slot for a cramp, with a kind of basin beneath it, is at the southern end of the block.

Redrawn.

3. Corner torus block C2 (pl. 100)

The northeast corner torus block is similar to C1, but more fragmentary. The torus of the east, front side is decorated; that of the north side is not.

Redrawn.

4. Regular torus block D1 (pls. 52b, 101)

Its findspot (fig. 29[D1]) is not recorded but seems to be identical with that of block F in Lisht Journal I, 69. In photo L 32–33, 87 it appears directly southeast of block H = I1. It was later moved to the north to be included in the montage of photo L 32–33, 339–340. The top side and the bottom were planed flat to make tight joints; the back is rough.

5. Regular torus block D2

Fragment of a block found east of the pyramid entrance. A sketch (Lisht Journal I, 93a) gives the height as 0.45 m. (0.12 torus + 0.33 wall below it) and a preserved length of 1.20 m. A slot for a cramp was in the preserved end of the block, 26 cm. from its front.

6. Regular torus block D3

Found 30 m. east of the pyramid entrance on the pavement. Only 0.64 m. of the block was preserved. It was 0.53 m. deep and had a slot for a cramp in the preserved end 0.225 m. from the edge. Sketch: Lisht Journal I, 93.

7. Regular torus block D4

It was found face down, almost on the pavement (fig. 29 [D4]). The block was 0.75 m. deep and 1.80 m. long. No drawing.

8. Regular torus block D5 (pl. 100)

It was found almost on the pavement (fig. 29 [D5]) and is visible on photo L 32–33, 105 directly beside J. There is a problem, however: in photo L 33–34, 266 it is directly at the foot of the pyramid, as it is today, but on the plan it appears 2 m. farther north. Was there another block? Redrawn.

9. Torus roll block E (pl. 101)

It was found to the west of the entrance and has a decorated torus. It must have been part of the front of the chapel, and its dressed joints show that it was used as a patch block.

10. Torus roll block E1 (pl. 101)

It was found to the east of the entrance. Its undecorated torus indicates that it was probably a patch block for the east side of the chapel.

11. Outsize torus block F (pl. 101)

This block, with a height of 0.75 m. and a maximum depth of 1.29 m., is larger than the regular torus blocks (height 0.45 m., depth 0.60–0.66 m.). Its great depth would have caused it to overhang the interior chapel wall and leave no bearing surface for the ends of the ceiling slabs; it must therefore come from the southern end of the chapel, where it would have projected over the casing of the pyramid. The back of the block, accordingly, is completely rough and far from vertical. It was found close to the pyramid casing near the west edge of the rebate, apparently *in situ* where it had fallen.

12. Torus molding and pyramid casing block G (pl. 101)

Fragments of a block of the pyramid casing which included part of the south wall of the chapel with its torus. This small piece showed that the top of the torus molding lay just 0.04 m. below a course of the pyramid casing (probably the fifth course; see page 00), and might indicate further that the masonry of the chapel was built at the same time as the pyramid casing. It may well be, however, that the torus was cut from a part of the casing stone which was left undressed and so protruded sufficiently.

BMMA 29, Nov. 1934, II, 30, fig. 24 = L 33–34, 557.

13. Northwest corner cavetto block H (pl. 100)

The cavetto is again carved only along the front. The turn of the corner at the back of the block is sharply cut. The block shows that the cavetto blocks of the front were shallower than those of the sides, their back just reaching the outside of the roof runnel, which had to be cut into the edges of the roof slabs.

Redrawn.

14. Regular cavetto block I1 (pls. 52a, 101)

Largest block visible on plan (fig. 29) and photo L 32–33,

<sup>266</sup> H. Chevrier, ASAE 29 (1929) 137, fig. 1.

87. Found upside down (L 33–34, 203, 261). All cavetto blocks have the same section and depth, with half the longitudinal roof runnel cut in the upper surface of their backs. The south face of each block also carried a vertical channel 0.04 m. wide and 1.5 m. deep, roughly cut and probably used for binding the mortar between the blocks during construction. This, the longest block (2.56 m.), has a slot for a cramp on the back face of its north end, which was made to join the block to the lion spout (block A).

15. Regular cavetto block I 2 (pls. 52a, 100)  
Visible on photo L 32–33, 87, and probably identical with block G in Lisht Journal I, 69 (fig. 29[I2]). Complete block. Redrawn.
16. Regular cavetto block I 3  
Visible on photo L 32–33, 105 and possibly identical with block M in Lisht Journal I, 69 (fig. 29[I3]). Complete block, length 1.54 m.  
No drawing.
17. Regular cavetto block I 4  
Complete block, length 0.66 m.  
No drawing.
18. Huge block J (fig. 30; pl. 52c)  
Lisht Journal I, 74–76.  
Drawing: AM 2647.  
Visible in distance on photos L 32–33, 105; 33–34, 203, 261, 266. This huge block (L. 2.74–2.75 m., W. 2.20–2.23 m., H. 1.15–1.25 m.) was found west of the robbers' hole at the pyramid entrance in front of the pyramid casing, resting almost on the surface of the pavement. Most of the features of the block and its importance for the reconstruction of the entrance chapel have already been discussed (page 77). It should only be added that three large, rectangular cuttings are visible above the pry-holes along its ancient north side (now west side). The purpose of these sockets is unknown. Borchardt and Hölscher would certainly have seen in them further proof of their theory about the existence of huge wooden tongs to lift blocks with the help of cranes.<sup>267</sup> Unfortunately, the opposite side of the block is destroyed; it should—in the event that Borchardt and Hölscher are right—have had a corresponding set of holes for such tongs. Although their theory is no longer generally accepted,<sup>268</sup> attention should be paid to such traces.
19. Ceiling block K  
Lisht Journal I, 92.  
Photo: L 33–34, 232.  
A badly weathered fragment of a block, 0.52 m. thick, which preserves the width (1.93 m.) but not the complete length of the original block (only 0.80–1.10 m. survives). The identification with block K (Lisht Journal I, 69) on the plan (fig. 29 [K]) is questionable, since K seems to be much smaller, and the description notes the findspot as “20 m. west of the break in the pyramid casing and 5 m. north of the base of the pyramid” (Lisht Journal I, 92). Much of the under surface on which stars were shown in relief has flaked off. The centers of the few stars left are 0.14 m. apart. No color is preserved, but comparisons with other, smaller fragments show that the stars were yellow and the sky blue. Three ceiling blocks of this size would have been sufficient to cover the chapel.

### 3. Conclusions

The discovery of the remains of the entrance chapel at Lisht was a welcome addition to the material already known from such buildings. Traces of the walls of these buildings were already known from several pyramid sites,<sup>269</sup> but astonishingly few had produced remains of architecture or decoration. This situation was the result of the fact that the entrance chapels were the first parts of the pyramid sites to be dismantled because they stood in the way of the tomb robbers, who would try to open the pyramid entrance by any and all means. Furthermore, the early explorers of the pyramids had little interest in the study of the scarce remains of these chapels, and may have neglected the material that would probably still have been available in the nineteenth century. One such example is the pyramid of Senwosret III at Dahshur, where Perring in 1839 excavated well-preserved remains of an entrance chapel without publishing it adequately, mentioning only “a portico, apparently connected by a stone platform with the casing of the Pyramid, and covered by a roof, formed by the successive projections of the courses of the blocks. These courses had met at the summit in the centre, and their angles had been cut away, so as to constitute a curved line.”<sup>270</sup> It is quite surprising to find evidence for a corbelled roof in an entrance chapel of that date, especially because Vyse depicts a relief block of the chapel with the *khoker*-ornament on the inside and a cavetto on the outside; it seems architecturally impossible to reconcile this block with a corbelled roof. The relief blocks shown by Vyse<sup>271</sup> would, however, fit into the decorative program of the chapel of Senwosret I; they include a butchering scene (Vyse, fig. 4) which in this case too might have been placed on the entrance wall (see here pl. 55).

The only other examples of the decoration of an entrance chapel came from the pyramid of Pepi II<sup>272</sup> and seem to confirm the suggestion that there was a specific architectural and decorative program for entrance chapels perhaps from the end of the Fifth Dynasty onwards. The program was adopted by Senwosret I and his successors in the Twelfth Dynasty in accordance with the attitude of these later kings towards the monuments of their predecessors of the Sixth Dynasty. The entrance chapels of the later Twelfth Dynasty, however, lost part of their function, since the actual pyramid entrances were no longer built in the center of the north side. But even Amenemhat III had an entrance chapel built at the north side of his pyramid at Hawara; it was an especially large one, as the excavation by Lepsius of a foundation pit 10.25 x 18.70 m. suggests.<sup>273</sup>

<sup>267</sup> Borchardt, *Neuserre* 150–151; Hölscher, *Chephren* 74–76.

<sup>268</sup> Even in the case of Greek architecture, scholars seem to reject the idea that cranes were used before the end of the sixth century B.S.: see J. J. Coulton, *Journal of Hellenic Studies* 94 (1974) 1–19; *Ancient Greek Architects at Work* (Ithaca, New York, 1977) 144; Roland Martin, *Manuel d'architecture grecque I* (Paris, 1965) 201–202.

<sup>269</sup> See bibliography below.

<sup>270</sup> Vyse, *Pyramids* III, 59.

<sup>271</sup> Vyse, *Pyramids* III, figs. 4–10 on two plates between pp. 60–63.

<sup>272</sup> G. Jéquier, *ASAE* 33 (1933) 141–142, pl. I; *Douze ans*, fig. 13; *Pepi II*, I, 2–5, figs. 1–4.

<sup>273</sup> LD Text II, 24, which also mentions several smaller relief fragments.



# BIBLIOGRAPHY OF ENTRANCE CHAPELS

Snefru:

Ahmed Fakhry, *The Monuments of Sneferu at Dahshur* I (Cairo, 1959) 41-42.

Unis:

Lauer, *Ounas* 60, fig. 38.

Teti:

Lauer, *Téti* 43-44, pls. 21 a-b, 36.

Djedkara:

Maragioglio, *Piramidi* VIII, 74, fig. 8 on pl. 10.

Pepi I:

Jean-Philippe Lauer, *BSFE* 52 (1968) 26; J. Leclant, *Orientalia* 38 (1969) 256.

Merenra:

Some wall blocks of the northeast corner and the cornice

block restored by the French Expedition. Not yet published.

Pepi II:

Jéquier, *Pepi II*, I, 2-5, fig. 1-4; G. Jéquier, *ASAE* 33 (1933) 141-142; Jéquier, *Douze ans* fig. 13.

Senwosret II:

Petrie, *Lahun II*, 5, pls. 8, 17.

Senwosret III:

Vyse, *Pyramids* III, 57, 59.

Amenemhat III, Dahshur:

Arnold, *Amenemhat III*, I, 64.

Amenemhat III, Hawara:

LD I, 47, Text II, 24.

Khendjer:

Jéquier, *Deux pyramides* 15-18, figs. 14-15, pls. 2, 3, 5.

## CHAPTER IX

### The Drains of the Inner Court

(pls. 58–59, 103–104)

Sources: See individual entries below.

When the joints of its casing were intact, huge quantities of rainwater<sup>274</sup> would have poured down the sides of the pyramid and gathered partly on the roofs of the mortuary temple and entrance chapel, but mainly in the inner court of the pyramid, where the foundations of court and pyramid alike would have been threatened by the runoff. It was therefore necessary to install elaborate drainage systems to direct the water into the outer court, where it could do less damage; only the smaller pyramids would have been at risk.

Probably all pyramid complexes were provided with such drains, but few have been investigated. The drains of the complex of Senwosret I are the best known because of a curious circumstance of excavation. In 1895 Gautier found royal statues discarded in a shaft which the Expedition believed to be a drain pit (see pages 21, 85). In the hope of finding more sculpture, the Expedition devoted considerable attention to clearing the other drainage pits in the complex.<sup>275</sup> When the work failed to produce further sculpture, however, the documentation of the excavated pits was left incomplete.

Water from the roofs of the entrance chapel and the mortuary temple was drained by channels and lion's-head spouts (see pages 53–54) either directly into the outer court or, as in the case of the back part of the mortuary temple, first through the inner court. From there, stone gutters led the water from the pavement through the foundations of the inner enclosure walls and into deep pits located five to eight meters in front of the walls in the outer enclosure. It is likely that the inner court pavement was given a slight outward slope in order to facilitate complete drainage, but damage to the surface of the pavement slabs prevented their measurement. Only the widening of the mouths of the channels can still be seen near the foot of the inner side of the walls.

The builders originally planned two drains on each side of the pyramid. The addition of pyramid 8 and the Ka-pyramid against the eastern wall of the enclosure, however, prevented the execution of the plan on that side. Investigations up to the present time have uncovered only one drain, A, in the east wall.

#### East Wall

##### DRAIN A

Sources: PHOTO: 16 L 68.

SECTION: AM 2671 (1:25).

In theory, this drain should direct water from the southeastern part of the inner court out of the enclosure towards the east;

later construction in the area, however, led to changes in its arrangement (fig. 28). In phase 1, the drain ran west-east at the place where the later enclosure of the Ka-pyramid meets the eastern wall. Water was directed by a shallow channel visible for 14 m. west of the eastern wall; the channel begins at that point as a shallow basin. The unusual length of the channel may reflect the proximity of the Ka-tomb.

When the north wall of the Ka-pyramid enclosure covered the drain, it was necessary to shift its inlet to the north (phase 2). The old paving stones were replaced with new ones that established a channel running northwest-southeast, and at the same time blocked the old channel leading from the west.

After some time, this drain went out of use, perhaps because it was obstructed by mud, or perhaps because its eastern outlet was blocked by the addition of a building directly against the enclosure wall on that side (see page 74). A third channel, phase 3, was accordingly built 2.5 m. north of the old one; this new drain runs directly from west to east. According to the drawing AM 2671, the box-like inlet, covered with a stone lid, rose above the level of the court pavement. This feature, however, has since disappeared, together with the outlets of the old and new drains into the outer court, which was still visible in photograph 16 L 68. The Expedition did not find the drainage shaft of drain A.

#### South Wall

##### DRAIN B

Sources: Letter of A. Lansing to H. E. Winlock, December 8, 1932.

Drain B, located close to the southeast corner of the pyramid drains the water from the eastern end of the southern court and the Ka-enclosure. The water of the Ka-enclosure passes through a channel in the western enclosure wall into the court of the main pyramid. The channel of drain B leads under the inner enclosure wall and ends in a huge drainage pit, 2.4 x 4.3 m. wide, about 8 m. in front of the wall. The pit was excavated during the First World War, but no information about the work is available except for Lansing's letter.

##### DRAIN C

Sources: PHOTOS: L 33–34, 328, 329, 331.

See above, Drain B, for letter.

Drain C leads to a pit 1.7 x 2 m. wide located about 6 m. in front of the inner enclosure wall. The Expedition emptied it in 1931/32.

#### West Wall

##### DRAIN D (pls. 29a, 88)

Sources: PHOTOS: L 31–32, 216.

See above, Drain B, for letter.

<sup>274</sup> L. Borchardt once estimated that up to 480 m<sup>3</sup> of water could fall in one heavy rainfall (*Sahure* 29).

<sup>275</sup> Essential documents are two detailed letters written by A. Lansing to H. E. Winlock Dec. 12, 1932 and February 26, 1933 (*Lisht Journal* I, 14–19).

Drain D drained the southern half of the inner court on the west. It ends in a pit about 2.2 m. square located about 7.6 m. in front of the enclosure wall. Lansing's letter notes that "there is no conglomerate or sand here, but the pit went down only a meter for that. A passage running from the adjoining pit probably explains why they did not carry it down any further."

The well-preserved channel begins about 2.5 m. inside the wall, and runs through the foundations of the enclosure wall at a slope of about 1.7 cm. per meter. The mouth at the foot of the wall is 0.28 m. wide; the width of the channel gradually diminishes to 0.15 m. in the outer court.

#### DRAIN E

Sources: PHOTO: L 31-32, 215.

This drain, which accommodated runoff from the northern part of the western inner court, is badly damaged; only its mouth is preserved. The Expedition excavated its drainage pit, which is 2.3 x 2.4 m. wide and located about 6.4 m. in front of the wall; no details of the work are known.

### North Wall

#### DRAIN F (pl. 58c)

Sources: PHOTO: L 33-34, 225.

See above, Drain B, for letter.

Water in the western section of the inner court on the north side was directed through drain F. The sections of its channel lying in the inner court and under the enclosure wall are destroyed; the Expedition found only the part in the outer court, which led into a round pit that "petered out as soon as it reached the loose conglomerate."

#### DRAIN G (pls. 59a-b, 103)

Sources: Lisht Journal I, 115.

PHOTOS: L 33-34, 397-398, 432-434.

SECTION: AM 2724 (1:100).

Drain G, running through the eastern half of the northern enclosure wall, is better documented than the other drains, apparently because the Expedition had hoped to find another deposit of statues in it. Its drainage pit does indeed differ from the others, and it lies close to the pit in which Gautier found the Osiride statues (see page 21).

The drainage channel is strikingly different from the others. From its outlet below the enclosure wall it bends sharply to the northeast and continues for 9 m. until it reaches the drainage shaft. No important structure or monument accounts for the displacement. The abrupt change in direction must instead be explained by a change in the function of the pit: originally prepared as the shaft for a tomb, it was reused for drainage.

The shaft is 1.2 x 2.75 m. wide, and oriented east-west, not north-south like a normal tomb shaft. It ends in the solid *tafl* at a depth of 19 m. The brick lining of the shaft begins 2.9 m. above the floor; it was not carried up through the less solid conglomerate, but was discontinued, and the lower 14.6 m. of the shaft was refilled with sand and gravel. On the bottom of the shaft, 4.45 m. below the "shelf," was erected a curious brick structure resembling a small vaulted tomb with a grave marker at the north end. It is situated approximately in the center of the pit and oriented east-west. Some of the roofing bricks were cut to form an interior vault; the small space contained nothing but brick dust. The structure was covered with gravel and some broken brick; above it, the top 3.5 m. of the pit was filled with

typical builders' and masons' debris<sup>276</sup> consisting of large dolerite mauls, pieces of granite and limestone, quantities of harder sandstone (quartzite?), blue-black dust resulting from the dressing or drilling of black granite with dolerite tools, gritty white dust from the dressing of limestone(?), potsherds, chiefly from the larger type of water jar, and an occasional admixture of brick dust. The mouth of the pit is much wider than the shaft.

#### THE "FRENCH STATUE PIT" (pl. 58d)

Sources: *Licht* 29, 38, pl. 15[1]; Gautier, *Fouilles de Licht* 14-15.

PHOTOS: 6LN 19, 25, 34.

PLAN: AM 2621 (1:200); position of pit indicated in pencil.

The interpretation of drainage pit G can be clarified by comparing it to the "statue pit" where in 1895 Gautier discovered the Osiride statues of the king (see page 21). This shaft was still visible when the Expedition began its work; in photographs it appears as a large depression with vertical sides exactly north of pit G, its center about 20 m. north of the stone enclosure wall. The Expedition did not re-excavate the pit; indeed, they used it as a dump, and it has vanished under mountains of debris. According to Gautier, the pit ended unfinished at the considerable depth of 21.75 m. — that is, in a manner similar to shaft G. Both shafts are oriented east-west, and both have been strengthened by brickwork in their lower parts. Gautier's pit too had been filled in with sand; the statues were found about 3.5 m. below the surface, thrown "pêle-mêle" in the sand and debris.

On the evidence of these features, Gautier suggested that the shaft was part of an abandoned tomb gallery similar to the catacombs of the royal family in the funerary complex of Senwosret III at Dahshur;<sup>277</sup> the interpretation of drainage pit G would follow accordingly. For reasons unknown, the original project represented by the two pits at Lisht was abandoned in favor of separate burials in the queens' pyramids. The change in building program must have occurred at a time before the drainage systems were completed, so that the southern of the two abandoned shafts could be incorporated into drainage installation G.

The fact that the statues and masons' debris were found in the upper parts of the two shafts suggests that they were filled while the pyramid was still under construction; it is not likely that two huge, useless pits would have remained open after the outer court was leveled at the end of the project. It follows that the disposal of the six royal statues did not take place long after the death of the king, but occurred even before it. Similarly, the masons' debris in pit G would be better explained as the result of a cleanup at the end of the construction than of a destruction of the complex in a later period.

It must be remembered, however, that the statues were set up only in a second phase of the causeway (see page 22), that is, rather late in the reign of the king; there would not have been much time between the erection of the statues and their removal.

<sup>276</sup> Close to the mouth of the pit a fragment of a gray granite head of a private statue was found. It might have belonged to the same kind of sculptors' debris. For the head (MMA 34.1.112) see *BMMA* 29, Nov. 1934, II, 8, fig. 14; Hayes, *Scepter* I, 215.

<sup>277</sup> *Dahchour* I 53-73; plan, fig. 105. Of course Gautier could not foresee the existence of shaft G, which accords very well with his suggestion. One might even suspect that the two shafts were intended to be connected as a kind of gallery tomb. This gallery, however, would not have run from east to west as in the precinct of Senwosret III, but from north to south.

It is possible that the northwest corner of the outer court had been used for masons' and sculptors' workshops. These structures might still lie hidden under the debris that was not removed by the Expedition.

#### DRAIN H

Sources: PLAN: AM 262I (1:200).

The existence of another, unexpected drainage system near the east end of the northern enclosure wall is suggested by the drawing AM 262I. The remains were discovered in 1923/24 during excavations near the northeast corner of the inner court, but the work was not completed and therefore never documented. It is not clear why an additional drain was installed in a location inconsistent with the placement of the drains west and south of the pyramid. It may have been thought necessary

because the complex of pyramid 8 prevented the installation of a drain at the northern end of the east wall. Apparently the Expedition did not attempt to find the corresponding drainage pit.

#### Pillared Court

#### DRAIN J (pls. 58a–b, 104)

Sources: PHOTOS: L 33–34, 394–396.

The drainage system of the pillared court of the mortuary temple has been discussed above (see pages 44, 54). The limestone channel leading into the northern outer court is preserved. North of this channel, a vast accumulation of limestone blocks—apparently, undressed fieldstones—was found, but no traces of the drain pit were observed.

## CHAPTER X

### The Deposits

Depositing objects for a religious purpose was a common practice in ancient Egypt. The best known kinds of deposits are foundation deposits and deposits of embalming materials. Not all deposits can be assigned to these categories, however, and it is clear that the range of types must have been far wider.

In the area of the pyramid of Senwosret I, the following groups of deposits can be distinguished:

1. *Foundation deposits.* These are deposits customarily placed under the corners of the main pyramid. Three were excavated by the Expedition; the fourth, deeply buried under debris, is inaccessible.
2. *Secondary deposits.* Outside the corners of the pyramid, in front of the foundation deposits, three smaller deposits were uncovered.
3. *Entrance cut deposit.* This single, unusually large deposit was found south of the so-called entrance cut (see page 92).
4. *South wall deposits.* A series of nine deposits or shafts for deposits was excavated along the southern side of the south wall of the inner enclosure. Most had been plundered before discovery; not all were related to the activities connected with the king's pyramid.
5. *Small pavement deposits.* The existence of these deposits was proved by evidence in the preserved stone pavement of the court of the pyramid temple and elsewhere. Many more such deposits may originally have existed.

#### 1. The Foundation Deposits

The Expedition was able to find and excavate the foundation deposits under the southeast, southwest, and northwest corners of the pyramid. A huge accumulation of debris prevented excavation of the deposit at the northeast corner. The deposits were placed in pits 2 m. wide and 2 m. deep, each located approximately 3 m. inside the corner of the pyramid. They were cut into the more or less solid surface of the desert, and covered by the foundation slabs of the pyramid casing. The contents of the northwest deposit were allocated to the Egyptian Museum, Cairo; those of the southeast and southwest deposits, to the Metropolitan Museum of Art.

##### A. THE SOUTHEAST FOUNDATION DEPOSIT (fig. 32; pl. 60)

Sources: Tomb cards 144–155.

BMMA 28, April 1933, II, 11–14, figs. 9–11 (plans and section).

PHOTOS: L 31–32, 180–181, 229, 233.

The deposit was placed not under the cornerstone, but under the adjacent block to the north. The roughly circular pit is 1.75 m. in diameter at the bottom and slightly wider at the top. It

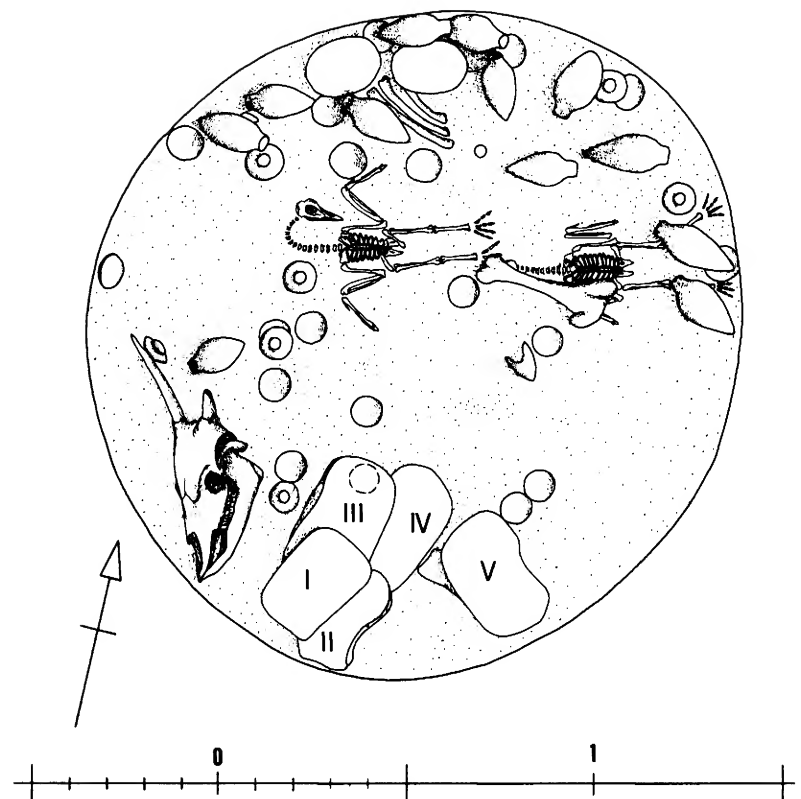


Fig. 32. Southeast foundation deposit, plan. Scale 1:20. See pl. 60.

was dug into the subsurface conglomerate, and its *gebel* floor lies 2.23 m. below the bottom of the foundation stone for the pyramid casing that covers it. The objects in the deposit lay scattered on the floor; they had apparently been tossed in somewhat carelessly, but not without plan. Much of the pottery was broken; it was quite common to find parts of the same pot widely separated. After the objects had been deposited, the hole was filled nearly to the top with white sand poured from east and west. Between this fill and the white sand in which the foundation block lies there is a layer of yellow sand, perhaps blown in by wind. This layer may indicate that some time elapsed between the filling of the pit and the laying of the foundation stone.

The deposit contained five bricks bearing the foundation plaques, offerings of beef and birds, and pottery. These objects were placed in the pit in the following order: birds; beef; pottery; brick V; brick IV; brick III; brick II; and brick I. The plaques were not inserted into ordinary bricks, but instead into rectangular "pies" of Nile mud that were cast in a mold and deposited while still wet.

#### List of objects

##### 1. Brick I

Photo: L 31–32, 229.

Brick, 3 x 18.4 x 28 cm. Nile mud mixed with sand and straw.

Plaque of copper<sup>278</sup> (MMA 32. 1.48), 4.5 x 9 cm., Th. 0.5 cm. Heavily oxidized; no inscription recognizable.

2. Brick II

Photo: L 31-32, 229.

Brick, 3 x 15 x 30 cm.

Plaque of yellowish white alabaster of rather inferior grade, 1.3 x 4.2 x 7.3 cm. (MMA 32. 1.46). On the unpolished surface, inscription (𓆎𓅓𓏏𓏏) 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 Mr: Snwsrt ptrj t3wy "The Pyramid: Senwosret is viewing the two lands".

3. Brick III

Photos: L 31-32, 227, 229.

Brick, 4 x 20.5 x 28.5 cm.

The plaque (MMA 32. 1.49) is of cedar wood. It was originally 1 x 5.9 x 11.7 cm. but is now rotted and has shrunk to 0.4 x 2.7 x 6.3 cm. The inscription, well preserved from its impression in the brick, was filled with blue paint. Same as inscription of Brick II.

4. Brick IV

Photo: L 31-32, 229.

Brick, 3 x 20 x 30 cm.

Plaque of an unidentified metal<sup>279</sup> (MMA 32. 1.47), heavily oxidized, 0.5 x 2.6 x 5.7 cm.

Inscription recovered only from impression in brick.

Same as Brick II.

5. Brick V

Photo: L 31-32, 229.

Brick, 3.5 x 20 x 31.5 cm.

Plaque of blue-glazed faience (MMA 32. 1. 45), the glaze almost completely gone, 0.7 x 4.9-5.2 x 10.6 cm. The inscription reads: 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 Mr: Snwsrt ptrj t3wy mrj ntr nfr "The pyramid: Senwosret is viewing the two lands, beloved of the good god".

6. MMA [32. 1.92]. Head of an adult long-horned bull.

7. MMA [32. 1.92]. Left humerus of adult long-horned bull.

8. MMA [32. 1.92]. Three ribs of adult long-horned bull.

9. MMA [32. 1.93]. Three, or perhaps only two aquatic birds.

10. Pottery (for details, see pages 106-107).

# B. THE SOUTHWEST FOUNDATION DEPOSIT (figs. 33-34; pl. 61)

Sources: Tomb cards 159-167.

BMMA 28, April 1933, II, 11, figs. 6, 10.

Lisht Diary, March 6-9, 1932.

PHOTOS: L 31-32, 94-96, 157, 158.

The pit for the deposit at the southwest corner of the pyramid is not shown on a plan; the description, however, seems to indicate that the southwest deposit was not completely hidden by the corner of the pyramid, but was only two-thirds covered by "the inner of the two large east and west stones" of the pyramid foundation. The hole, about 2 m. wide and equally deep, was filled with sand that was dumped from the north. A circular slab about 20 cm. less in radius than the hole was laid on top of the sand filling; on its surface was cut a bed 17 cm. deep for the inner foundation stone.

The objects lay on the *gebel* floor. The orders of their placement can be reconstructed: the meat offerings and the fowls; the pottery; and the bricks, which again had been deposited while still wet, as shown by the fact that brick V was flattened out around a saucer. The birds were not carefully arranged, but had been thrown in. The pots had been broken before deposition, and pieces were either missing or scattered widely over the floor.

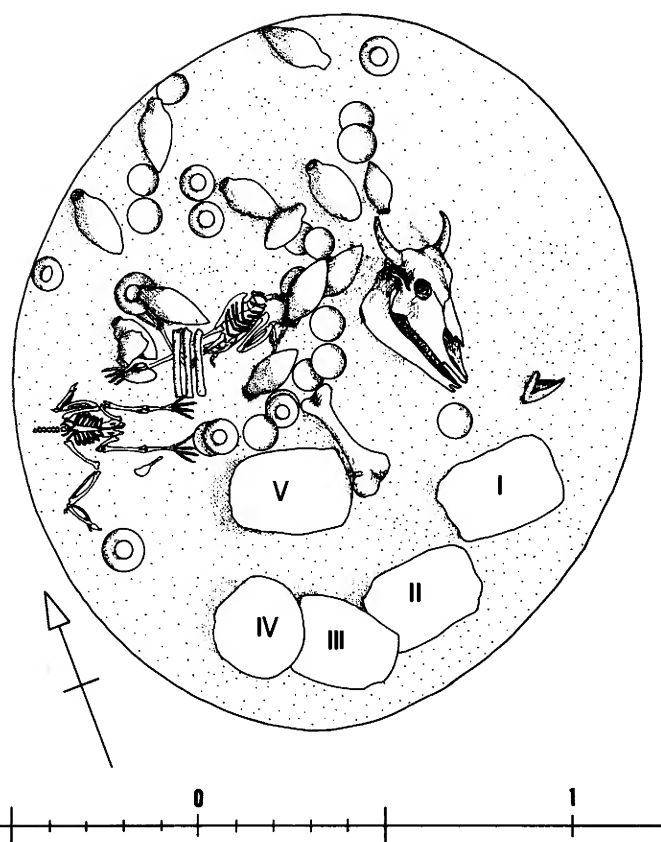


Fig. 33. Southwest foundation deposit, plan. Scale 1:20. See pl. 61.

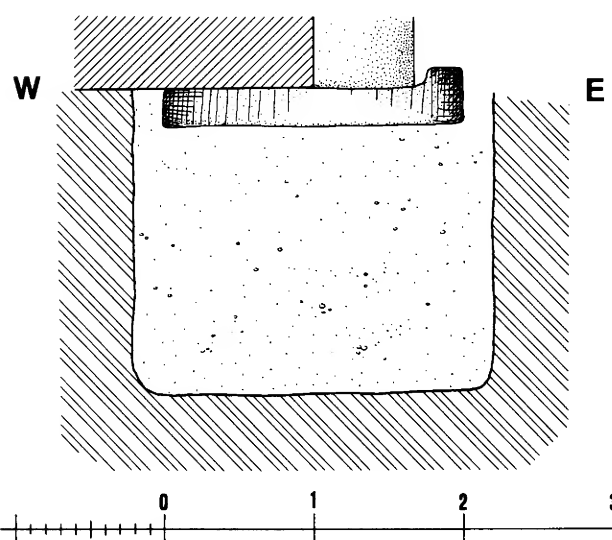


Fig. 34. Southwest foundation deposit, plan. Scale 1:50.

## List of objects

### I. Brick I

Photo: L 31-32, 158.

Brick, 2.5 x 21 x 32 cm.

The plaque (MMA 32. 1. 1) is of blue glazed faience which

<sup>278</sup> An X-ray fluorescence analysis carried out by the Metropolitan Museum of Art in 1980 confirmed the conclusions of 1932 that the metal is pure copper with trace amounts of iron, aluminum, etc.

<sup>279</sup> The poor state of preservation of the object prevents an analysis.



## 2. Brick II

Brick, 2.5 x 20 x 31 cm.

### 3. Brick III

Brick, 2.5 x 23 x 29 cm.

#### 4. Brick IV

Brick, 2.5 x 24 x 27 cm.

## 5. Brick V

Brick, 2.5 x 22 x 33 cm.

6. MMA [32.1.43 A]. Head of a young bull.

7. MMA [32.1.43 B]. Three ribs of bull.

8. MMA [32.1.43 C]. Humerus of a bull.

9. MMA [32.1.44]. Skeletons of two aquatic birds (ducks or geese).

10. Pottery (for details, see pages 107–108):

24 small saucers (MMA [32.1.17-40])

12 jars with pointed bottoms (MMA [32. I. 5-10]).

(figs. 35–36; pls. 62, 63a–b, d)

*BMMA* 28, April 1933, II, 8, figs. 7-8.

Lisht Diary, March 23, 1932.

PHOTOS: L 31-32, 57-63, 160, 161, 229, 233.

The position of this deposit was not indicated on a plan, but from the description in the Expedition records and our observations of 1986, it may be concluded that it was largely covered by the southern of two huge foundation slabs and lay 1.85 m. from their western edge. The pit was cut into the conglomerate on which the northern foundation slab was placed. The thinner southern slab lay in a bed of white sand 10–15 cm. thick.

The fill consisted mainly of white sand and occasional pebbles of flint and quartz. It was sealed by a solidified layer of 8-10 cms. of red sand and pebbles. On top of this and under the south stone of the pyramid foundation lay a beam, apparently a lever for the placing of the stone. It was 1.07 m. long,

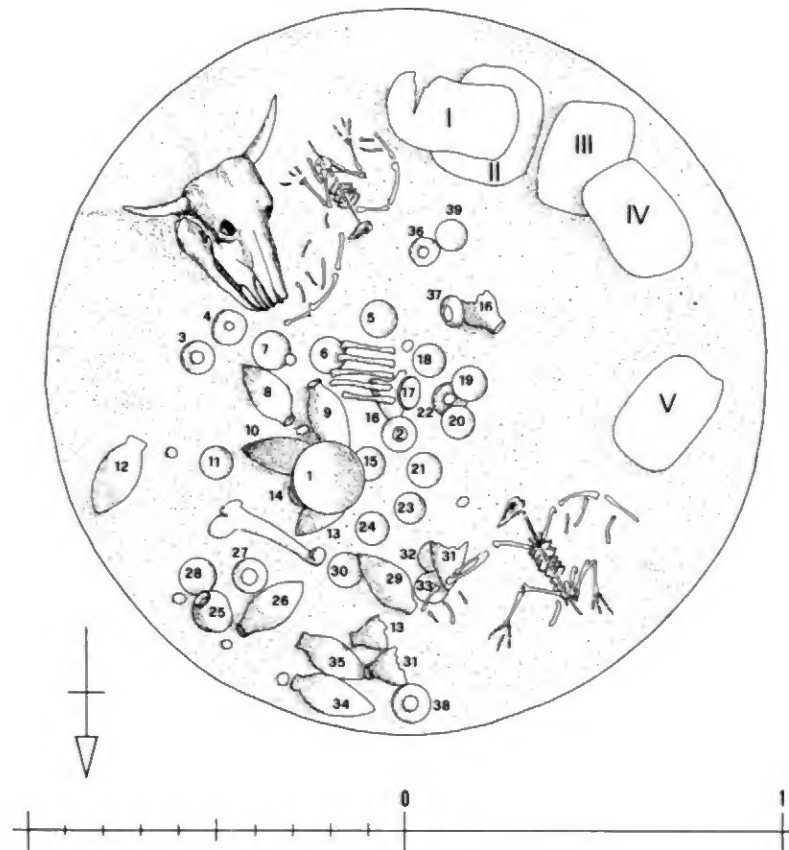


Fig. 35. Northwest foundation deposit, plan. Scale 1:20. See pl. 62.

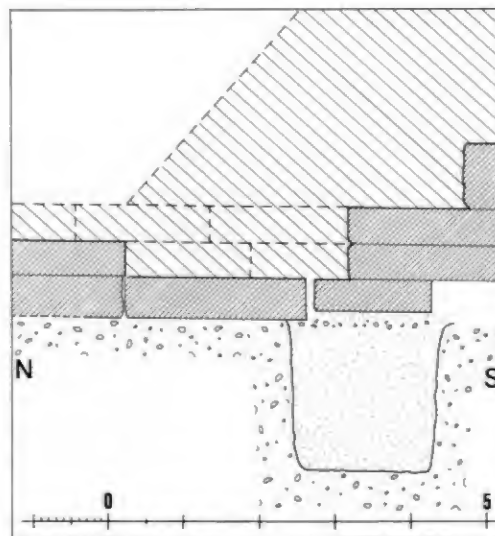


Fig. 36. Northwest foundation deposit section. Scale 1:100.

10-15 cm. in diameter and had dowel holes of the same kind as the beams of the slideways.

The objects lay scattered over the *gebel* floor of the hole at a depth of 2 m. The order in which they were placed is not completely certain. It is clear that the ribs of beef and the bird were put in after the pots, as they overlie a number of them. The ox-head and the foreleg of beef seem, on the other hand,

<sup>280</sup> An X-ray fluorescence analysis in 1980 confirmed the results of 1932 that the metal is pure copper with trace amounts of iron, aluminum, etc. No tin was found.

<sup>281</sup> The analysis performed in 1980 confirms that of 1932 insofar as the alloy consists of silver, gold, and copper; however, it also mentions lead and differs so much in proportionate distribution that it is advisable to publish no numbers here. The numbers given in *BMMA* 28, April 1933, II, 14 seem not to be reliable.

to have preceded the pottery, as the vessels are grouped closely around both the head and the joint. The bricks were presumably deposited last, and were still wet when dropped into the pit.

#### List of objects

(All objects share the inventory number Cairo JdE 58 904.)

1. Brick I  
Brick, 2.5–3 x 19 x 35 cm.  
The wooden plaque, 0.7 x 6 x 12 cm., had entirely rotted away, but had left its impression and its blue paint in the mud of the brick. The inscription reads:  
(𓆎𓅓𓏏𓏏) 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 Mr: Snwsrt ptrj t3wy “The pyramid: Senwosret is viewing the two lands”.
2. Brick II  
Photo: L 31–32, 182.  
Brick, 3.4 x 25 x 32 cm.  
The plaque is of copper and measures 0.25 x 4.5 x 8.5 cm. It is heavily oxidized; no inscription can be detected.
3. Brick III  
Photo: L 31–32, 161, 162, 182.  
Brick, 3.4 x 21 x 32 cm.  
The plaque, of white alabaster of a rather inferior grade, measures 1.4 x 4.7 x 7.4 cm. The inscription is incised on the flattened but unpolished surface and is the same as that of brick I.
4. Brick IV  
Photos: L 31–32, 159, 160, 182.  
Brick, 4.2 x 21 x 32 cm.  
The plaque is of blue glazed faience which is badly eroded; only spots remain. It measures 0.8 x 5 x 10 cm. The inscription was roughly incised after firing and is filled with black. It reads: 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 S3 R' Snwsrt dj 'nh dt ptrj t3wy mry “The pyramid: The son of Ra Senwosret is viewing the two lands, beloved”.
5. Brick V  
Photo: L 31–32, 182 (first left).  
Brick, 3 x 19 x 30.5 cm. The plaque is of a metal alloy and measures 0.05 x 3.2 x 6.4 cm. It is heavily oxidized, but the 𓆎 of the inscription is recognizable.
6. Head of young bull.
7. Humerus of a large bovid.
8. Ribs of an ox.
9. Bones of an aquatic bird (duck or goose?).
10. Bones of an aquatic bird (duck or goose?).
11. Pottery (for details, see pages 108–109):

#### INTERPRETATION

As the contents of the foundation deposits of Senwosret I have already been the object of a detailed study,<sup>282</sup> it is sufficient here to focus on the following points.

The inscriptions on the plaques have preserved the name of the pyramid: (𓆎𓅓𓏏𓏏) 𓆎𓅓𓏏𓏏 𓆎𓅓𓏏𓏏 Mr: Snwsrt ptrj t3wy “The pyramid: Senwosret is viewing [or surveying] the two lands”. The other name hitherto connected with the building (𓏏𓏏𓏏) 𓏏𓏏𓏏 = 𓆎 Hnm-swt Hpr-k3-R’ “United are the places of Kheperkara” must therefore be the name either of the mortuary temple or of the pyramid complex as a whole.<sup>283</sup> The name may have been chosen at the very last moment before the foundation ceremony, because the signs 𓆎𓅓𓏏𓏏 were originally omitted from the faience plaques, and were scratched in only after firing.

The foundation deposits seem to have been installed some

time before the actual construction work—digging the foundation trenches, laying the foundation slabs—started.

The components of the deposits consist of five bricks containing the plaques of “silver,” bronze, wood, alabaster, and faience, a head of a bull or an ox, some ribs, a humerus of the animal, two geese or ducks, and a set of three different types of model vases. The bricks and the animal heads were very carefully placed on the floors of the pits. The priests seem then to have climbed out of the pits and thrown in the birds and the pottery from above, causing breakage and disorder among the offerings.

## 2. The Secondary Deposits

Besides the actual, rich foundation deposits the Expedition discovered smaller, secondary deposits in front of the pyramid corners. These deposits had been dug slightly outside the pyramid corners, into the already existing pavement of the inner court and must therefore be dated to a later phase of the pyramid construction. One may suppose that they were placed either for the inauguration of the pyramid or for the burial of the king. Of the three deposits found by the Expedition—the northeast corner was not excavated—only the southeast deposit is documented.

#### A. THE SOUTHEAST SECONDARY DEPOSIT

(fig. 38; pl. 63c)

Sources: Tomb cards 144–145.

BMMA 19, Dec. 1924, II, 35; 28, April 1933, II, 14.

PHOTOS: 6 LN 45–48.

About 0.85 m. from the pyramid corner a rectangular opening was cut into the corner of a huge pavement slab, and a shaft 0.60 x 0.70 m. in width was cut to the *gebel* surface, a depth of 1.6 m. After the pit was filled it was closed with a stone lid that was fitted into a socket in the pavement slab. The sides of the pit were originally lined with bricks; they were dissolved, however, by rainwater and washed into the shaft, where they mixed with the decayed remains of an ox skull. Except for the teeth of the ox and some bones, no remains were found in the pit.

#### B. THE SOUTHWEST SECONDARY DEPOSIT

(pl. 64a)

Sources: Tomb card 156.

The deposit seems to have been directly attached to the corner foundation stone. It was disturbed, and only the left side of the lower jaw of an ox, a molar, and small fragments of a “common red ware water pot” were preserved.

#### C. THE NORTHWEST SECONDARY DEPOSIT

Sources: Lisht Diary, Feb. 8, 1932.

The deposit, found in line with the diagonal of the pyramid outside the cornerstone, was laid in the pavement of the inner court. It was plundered, but a single ox tooth shows that it had the same contents as the other two deposits.

<sup>282</sup> Weinstein, *Foundation Deposits* 47ff, 71ff.

<sup>283</sup> See BMMA 28, April 1933, II, 14; Pierre Lacau and Henri Chevrier, *Une chapelle de Sésostri Ier* (Cairo, 1956) 209[583].

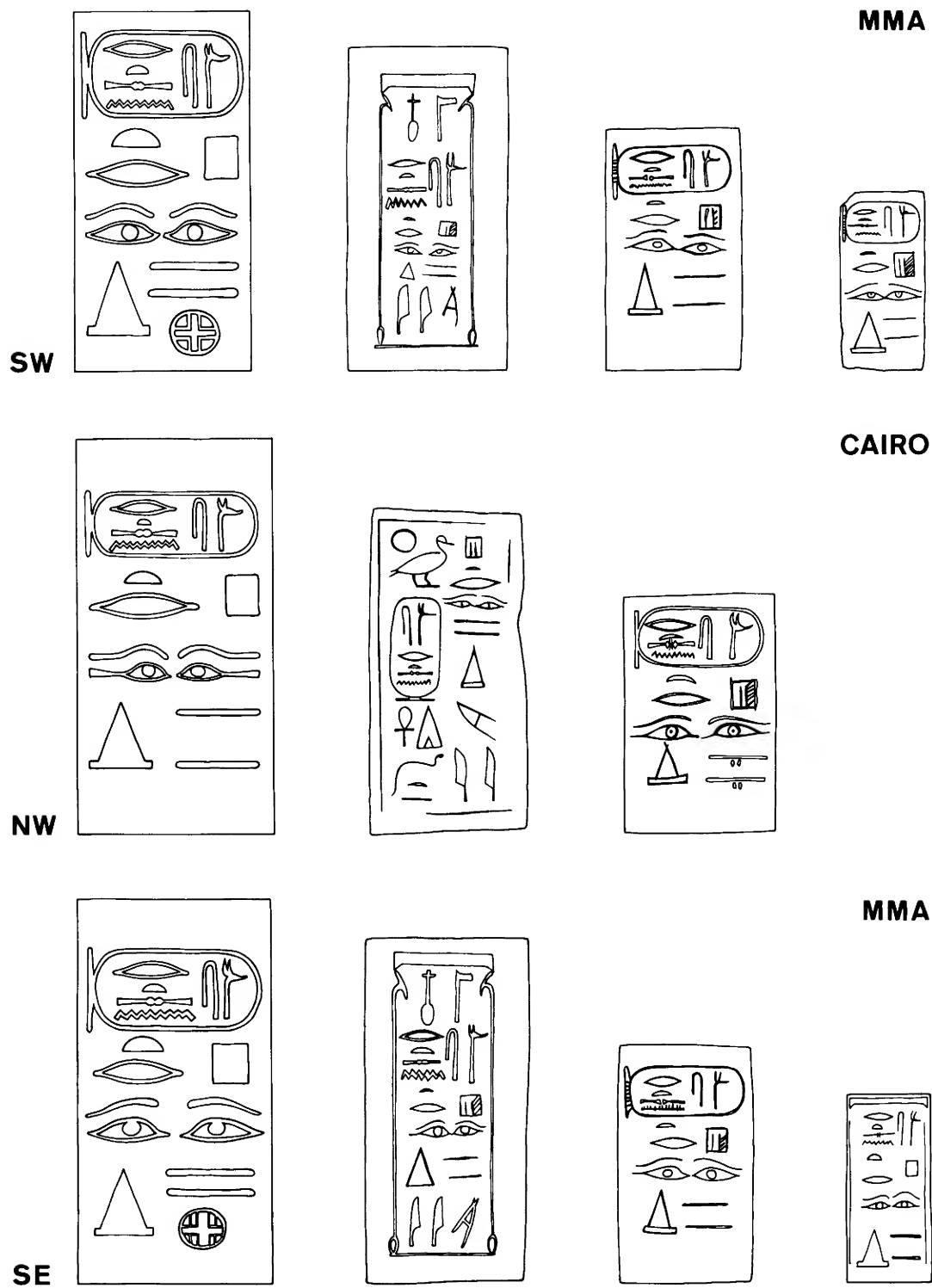


Fig. 37. Inscribed plaques of the three foundation deposits in Metropolitan Museum of Art and the Egyptian Museum, Cairo: Scale 1:2. See pls. 60c, 61c, 62d.

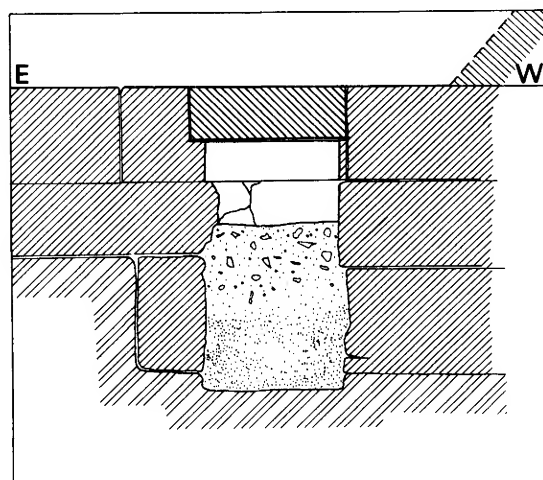


Fig. 38. Southeast secondary foundation deposit, section. Scale 1:40. See pl. 63c.

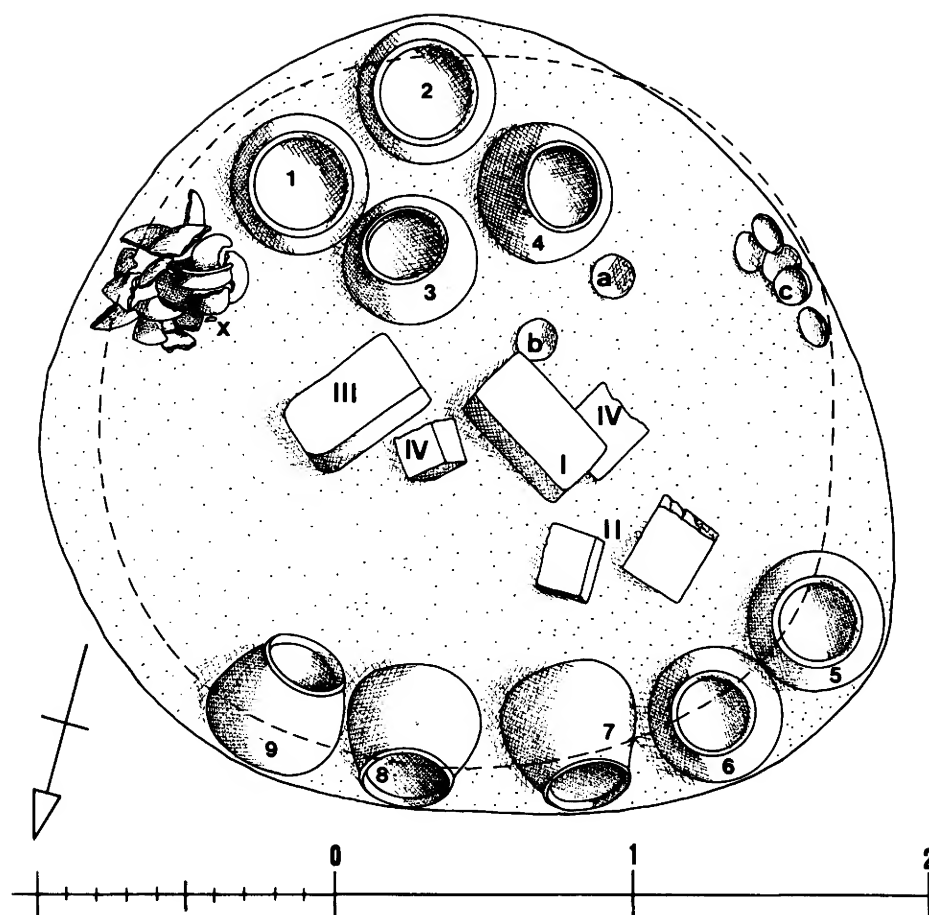


Fig. 39. Entrance cut deposit, plan. Scale 1:25. See pls. 64c-d, 65.

### 3. The Entrance Cut Deposit (fig. 39, pl. 64c-d, 65)

Sources: Tomb cards 639-647.

PHOTOS: Position: L 32-33, 342; 33-34, 199.

Contents: L 31-32, 173; 32-33, 52, 53.

Pottery: L 32-33, 234-236, 336.

Directly west of the so-called entrance cut (see page 66), a huge deposit was discovered. Since it was partly covered by the southeast corner of the enclosure wall of the small pyramid 7, one cannot completely rule out the possibility that the deposit belonged to that pyramid. The position and size of the hole suggest, however, that the deposit should be connected with the entrance cut. The pit was a roughly circular shaft 2.5 m. in diameter and 5.35 m. deep, cut through the *gebel* surface into the sub-surface of white sand. The pit is therefore much larger than the ordinary foundation deposits. Its contents—33 pots—may not have been the original deposit, since a much smaller pit would have been sufficient for the burial of these vessels. The tops of the nine jars were about 4.80 m. below the surface; on that level too were found the remains of four broken bricks which had been thrown or had fallen into the deposit “after the placing (and probably displacing) of the pottery,” in the words of the tomb card. The top of the pit had been filled with sand “which is a little pinker in color than the surrounding *gebel* sand, the latter being a distinct gray.”

The possibility that a corresponding shaft lies to the east of the entrance cut cannot be ruled out, but such a feature has not been sought.

#### LIST OF OBJECTS

(for details of the pottery, see pp. 109-112)

- 9 large jars; one Cairo 60 248, one MMA [33.1.166]
- 6 bowls in fragments
- 7 dishes in fragments
- 4 flat-bottomed dishes in fragments
- 7 round-bottomed dishes in fragments
- 1 worked flint flake (contents of a jar).

### 4. The South Wall Deposits (figs. 40-41; pl. 66; foldout I)

Outside the southern wall of the inner enclosure nine deposit holes were discovered (foldout I). Their different shapes and sizes and the uneven distance to the enclosure wall and between the pits indicate that they do not represent a single unified project, but were laid at different periods and intended to contain various groups of objects or deposits. Only the first two holes from the west might belong to the activities connected with the main pyramid, while the other seven were probably laid in connection with pyramid 2 of Ita-kayet (deposits 3-4)<sup>284</sup> and pyramid 1 of Neferu (deposits 6-9). Those deposits will therefore be treated in Volume II of this publication. Deposits 1-2 are dealt with in connection with the pottery on pages 112-116.

<sup>284</sup> No. 4 is the pit in which the wooden sledge MMA 24.1.84 was found; see *BMMA* 15, July 1920, II, 10-11, fig. 7.

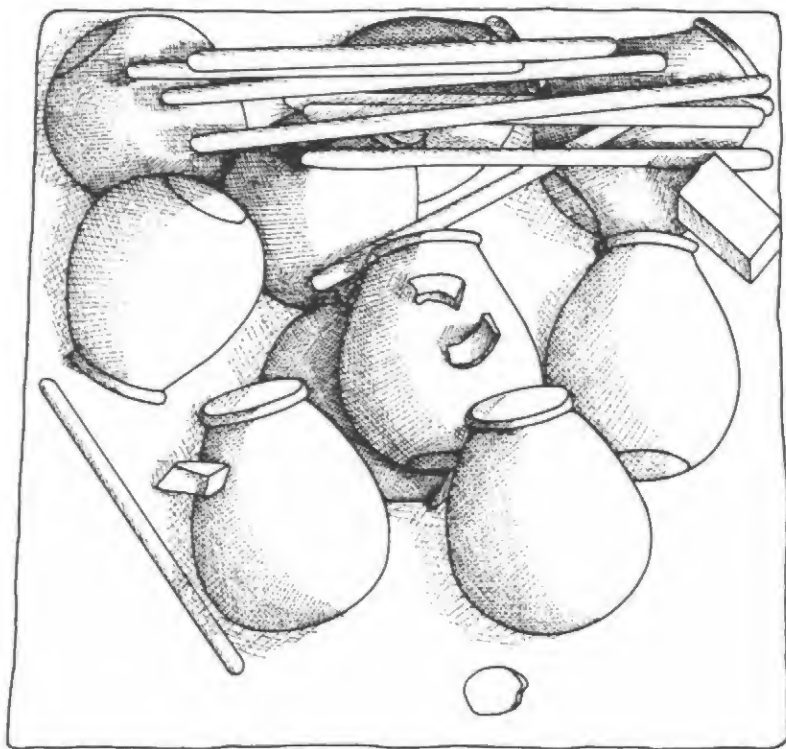


Fig. 40. South wall deposit, plan of upper layer. Scale 1:20. See pl. 66.

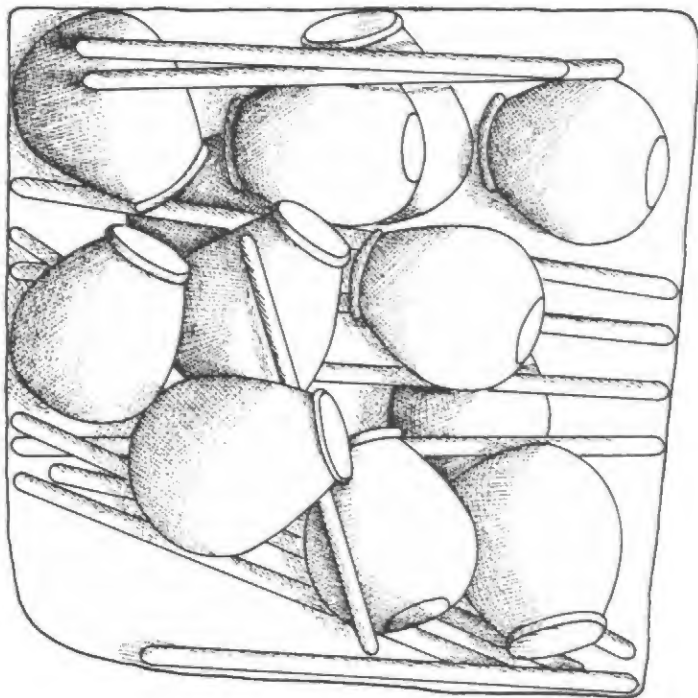


Fig. 41. South wall deposit, plan of lower layers. Scale 1:20. See pl. 66.

### 5. The Small Pavement Deposits

In the description of the court of the pyramid temple (pl. 18c) and the Ka-pyramid (pls. 47b, 98b) (pages 44, 74), small deposit holes were mentioned which were certainly cut after the pavement slabs were laid and which certainly were not foundation deposits. The secondary corner deposits of the pyramid and perhaps deposits 1 and 2 outside the south wall of the inner enclosure (page 92) may also fall into this category. One further example was discovered opposite the pyramid entrance at the foot of the inner side of the inner enclosure wall (fig. 42). It is 37 cm. deep and was between 48 and 60 cm. wide from north

to south. Its north-south dimension can no longer be determined, because the next pavement block into which it was cut is missing. The area was excavated by the Expedition; on re-examination, the hole was completely empty. The position of the hole opposite the entrance of the entrance chapel of the pyramid shows that it could have been dug in connection with the inauguration of the chapel or the burial of the king.<sup>285</sup>

<sup>285</sup> In shape and position it resembles the sandstone box at the entrance of the dromos leading down into the burial chamber of king Mentuhotep; see Arnold, *Mentuhotep I*, 44-45, fig. 29.

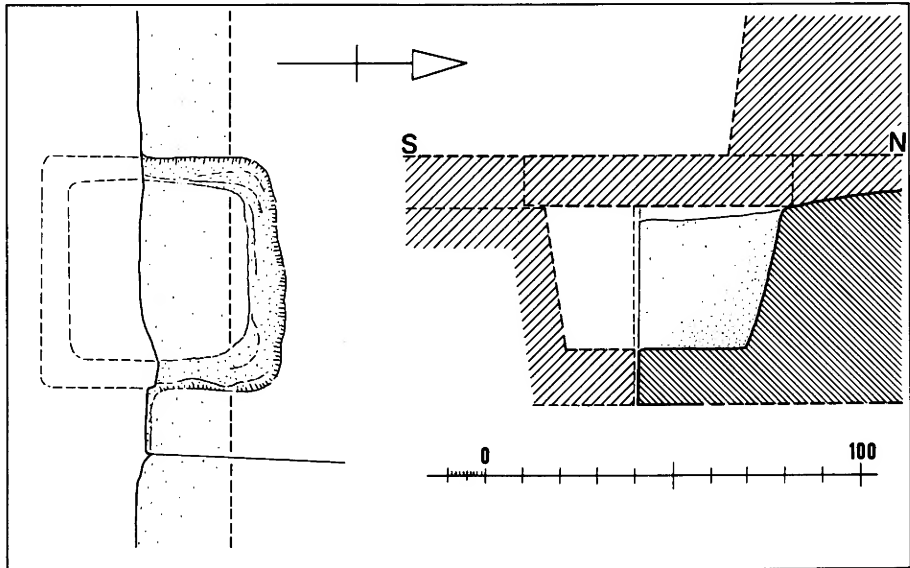


Fig. 42. Small pavement deposit opposite entrance of main pyramid. Scale 1:20. See pl. 64b.

## CHAPTER XI

### The Finds of the Funerary Complex of the King

#### 1. Remaining Stone Monuments from the Mortuary Temple (figs. 43–46; pls. 68–69)

Tomb cards and photographs show that in addition to the great quantities of relief fragments of the temple decoration, the Expedition found a number of fragments of stelae, offering tables, statuary, and other stone objects of red, gray, and black granite and limestone. These had been broken up when the mortuary precinct of Senwosret I was used as a quarry. Because of their shape and material, these objects could not be used as building material; they were perhaps intended to be re-used for other purposes, however, since they had been collected in the empty space of the southeast outer court of the pyramid. No more precise provenance can be ascertained from the records of the Expedition, and we therefore cannot be sure that a part of this material did not originally come from the mortuary chapels of the smaller pyramids, mainly pyramids 1–3, which were closest to this area. If the fragments do belong to the mortuary temple of the king they convey an idea about the abundance of statues, altars and other stone monuments which must have filled Egyptian mortuary temples, regardless of the relatively short period the mortuary temple of Senwosret I was actually operating.

##### A. FRAGMENTS OF STELAE OR SHRINES

- 1 Torus molding (fig. 43[1.1])  
Sources: Tomb card 665 with sketch 1:5.  
PHOTO: L 33–34, 442 E.  
“Old material, *radim*.” Red granite. Fragment of torus molding. H. of torus 6.5 cm. The surface of the torus is cut back on either side of the bands in order to accentuate the lashing.
- 2 Frame of a stela(?) (fig. 43[1.2], pl. 68c [1.2])  
Sources: Tomb card 299 with sketch 1:5.  
“East side of South Pyramid, old material.” Black granite. Ten or twelve fragments of the stepped frame, highly polished, no traces of inscriptions.
- 3 Torus molding (fig. 43[1.3])  
Sources: Tomb card 633; drawing only.
- 4 a–c Cavetto and torus molding (fig. 43[1.4a–c])  
Sources: Tomb card 662 with sketches 1:5.  
PHOTOS: L 12–13, 301–303.  
“South pyramid, old material.” Painted aragonite.<sup>286</sup> three fragments of a cavetto and torus of coarse-crystalled aragonite. Exposed surfaces painted. Heavy black outlines. Cavetto leaves r., bl., gr. and y. Torus lashing y. and bl.

- 5 Fragment of a stela (fig. 43[1.5], pl. 69c [1.5])  
Sources: Tomb card 293.

PHOTO: L 33–34, 444.

Old material from outer court east and southeast. Incised inscription from black granite stela (or statue?). Bottom flat but rough. Top and side polished.

##### B. OFFERING TABLES, ETC.<sup>287</sup>

- 1 Offering table (fig. 43[2.1]; pl. 68a [2.1])  
Sources: Tomb card 290 with sketches 1:5.  
PHOTOS: L 12–13, 288; L 33–34, 436, 437.  
“South pyramid east side, old material.” Gray granite. Extant fragments from edge of top of table. All surfaces except bottom polished. The table was only 0.30 m. high, with undecorated sides; it is of the type represented in the *htp*-hieroglyph. Inscription incised; H. 17.5 cm. The excellent style and execution, the royal title, and the size of the inscription indicate that this offering table belonged to the mortuary temple of the king and perhaps stood in the main sanctuary.
- 2 Offering table (fig. 44[2.2], pl. 68b, 69c[2.2])  
Sources: Tomb cards 291–292 with sketches 1:5.  
PHOTOS: L 12–13, 282, 285, 290; L 33–34, 439.  
“Outer court east south side, old material, *radim*.” Coal-black granite. The stone is dingy and coarse-grained, with incised decorations and inscriptions. It is not certain that all the fragments belong to the same object. All extant surfaces (also bottom?) polished. The fragments originate from an altar which was—on a smaller scale—an exact copy of the huge altar found by Gautier in the pillared court of the mortuary temple (page 44), which is a real “table” in block form.
- 3 Offering table (fig. 43[2.3], pl. 68a[2.3])  
Sources: Tomb card 291 with sketch 1:5.  
PHOTO: L 33–34, 436.  
“South pyramid east side, old material.” Gray granite. Decoration and inscriptions incised. All extant faces (also bottom?) polished.
- 4 Offering table (fig. 43[2.4], pl. 68a[2.4])  
Sources: Tomb card 291 with sketch 1:5.  
PHOTOS: L 12–13, 289; L 33–34, 436.  
“South pyramid east side, old material.” Gray granite, inscription incised.
- 5 Offering table (fig. 43[2.5], pl. 68a[2.5])  
Sources: Tomb card 292 with sketch 1:5.  
PHOTO: L 33–34, 436.  
“South pyramid, outer court east south side, old material, *radim*.” Gray granite. The inscription is incised and indicates that it apparently belonged to a princess.

<sup>286</sup> Aragonite is a rather hard (3.5–4) and heavy (2.9) polymorphic modification of CaCO<sub>3</sub> (calcite), colorless or gray or white transparent.

<sup>287</sup> Two offering tables of Senwosret I were recently found in the canal east of the pyramid of Amenemhat I; see Aly El-Khouly, *JEA* 64(1978) 44, pl. 9. They seem, however, to have belonged to another building of that king, probably to a temple in the town of *Jfj-t3wj*.



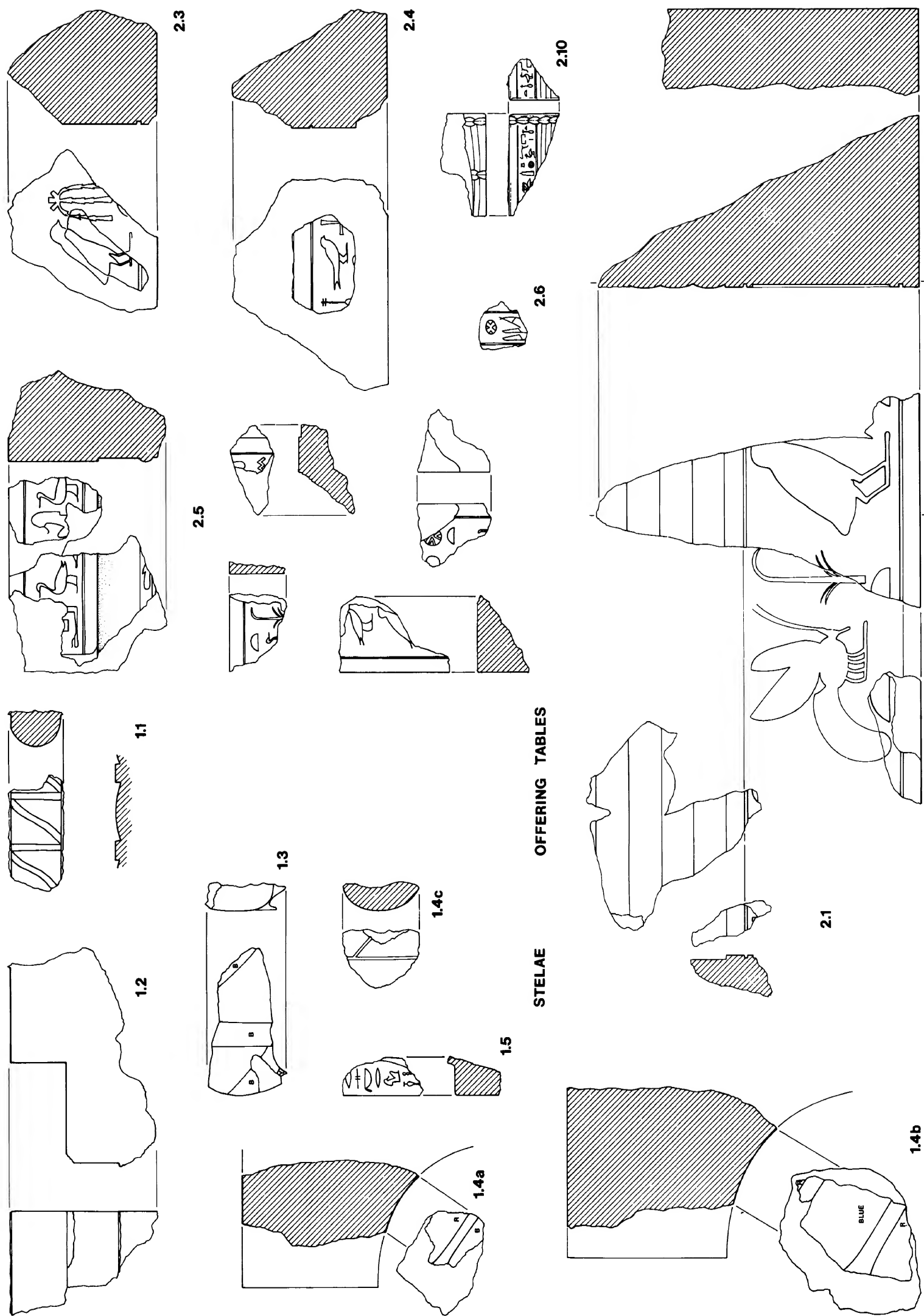


Fig. 43. Fragments of stela and offering tables from east side of main pyramid. Scale 1:50. See pl. 68.

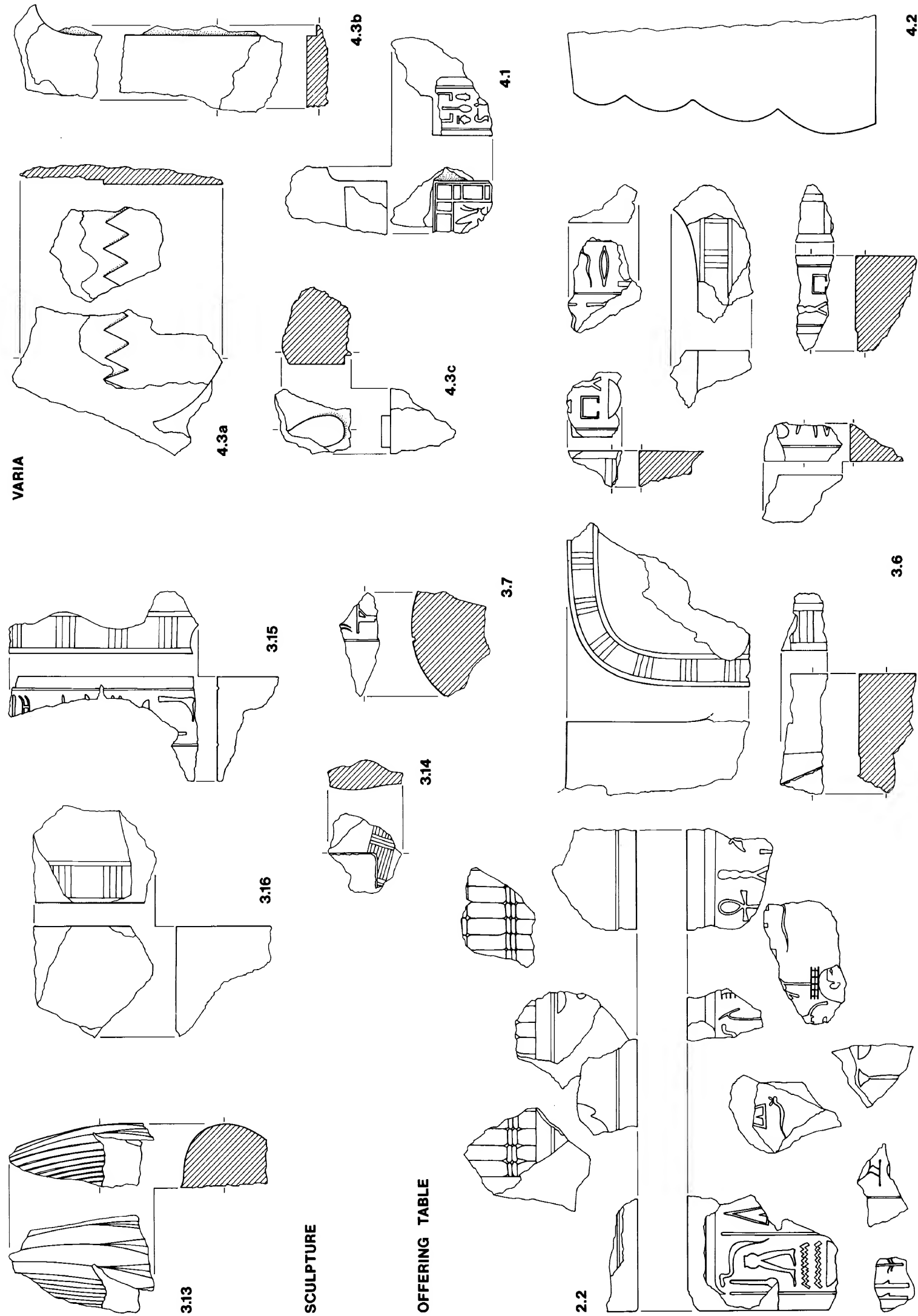


Fig. 44. Fragments of offering tables and sculpture found at the east side of the main pyramid. Scale 1:5. See pls. 68-69.

- 6 Offering table (fig. 43[2.6], pl. 69c[2.6])  
Sources: Tomb card 291 with sketch 1:5.  
PHOTO: L 33-34, 444.  
"South pyramid east side, old material." Gray granite. This fragment might also have belonged to 5.
- 7 Offering table  
Sources: PHOTO: L 12-13, 263.  
No provenance. Apparently granite. Pattern of bound reed matting.
- 8 Offering table(?)  
Sources: PHOTO: L 12-13, 280.  
No provenance. Apparently granite. Pattern of reed(?).
- 9 Offering table(?)  
Sources: PHOTO: L 33-34, 471.  
No provenance. Pattern of reed matting of offering table?
- 10 Offering table (fig. 43[2.10], pl. 69c[2.10])  
Sources: Tomb card 293.  
"South pyramid, outer court, old material." Gray granite. Offering table of a steward Sa-neferet. Possibly part of an offering table held by a statue (circular flange broken, on top). Inscription and reed matting incised.

#### C. FRAGMENTS OF SCULPTURE

- 1 Statue  
Sources: PHOTOS: L 12-13, 280; L 33-34, 444.  
Wig tab of a granite statue.
- 2 Statue  
Sources: PHOTO: L 12-13, 283.  
Fragment of the arm(?) of a granite statue; under life-size.
- 3 Statue  
Sources: PHOTO: L 12-13, 284.  
Fragment of arm(?) of a granite statue.
- 4 Statue  
Sources: PHOTO: L 12-13, 279.  
Fragment of the kilt(?) of a granite statue.
- 5 Statue  
Sources: PHOTO: L 12-13, 305.  
Part of the red crown(?) of a limestone statue.
- 6 Statue (fig. 44[3.6], pl. 69c[3.6])  
Sources: Tomb card 297 with sketch 1:5.  
PHOTO: L 33-34, 444.  
One fragment found at the southeast corner of the pyramid, another at the north side (!) of the pyramid in the 1932/33 season. At least seven fragments of the inscribed throne of a seated statue. The sides of the cubic throne were decorated with a curved border, suggesting a throne of an archaic type.<sup>288</sup> The figure might have been life-size.
- 7 Statue (fig. 44[3.7], pl. 69c[3.7])  
Sources: Tomb card 298 with a sketch 1:5.  
PHOTO: L 33-34, 444.  
"Outer court, old material, *radim*." Fragment of gray granite statue or other object with rounded, highly polished surface. Inscription incised.
- 8 Statue  
Sources: Tomb cards 671, 711.  
PHOTO: L 33-34, 452.  
"South pyramid, old material." Four fragments of an over-life-size statue of limestone. Fairly good workmanship with nicely rounded and smoothed surfaces. Traces of red paint.

A) fragment of the left leg just below the knee: L. 24 cm., W. 14 cm., Th. 9.5 cm.; B) fits on to a part of the upper end of fragment A: L. 10 cm., W. 13 cm., Th. 9 cm.; C) L. 16.5 cm., W. 14.5 cm., Th. 8.5 cm.; D) fragment of double "handkerchief," perhaps from another statue.

- 9 Statue  
Sources: PHOTOS: L 12-13, 299-300.  
Fragment of the kilt(?) of a statue of hard limestone.
- 10 Statue  
Sources: PHOTO: L 12-13, 299.  
Fragment of the kilt(?) of a statue of hard limestone.
- 11 Statue (pl. 69 b)  
Sources: PHOTO: L 12-13, 251.  
Middle part of the *shendjt*-kilt of a seated, life-size male statue of limestone.
- 12 Statue of hall-keeper and priest Senwosret, MMA 24.1.72 (fig. 45, pl. 69a).  
Sources: Tomb card 184a.  
PHOTOS: 6LN 152-154; Neg. nos. 58660; 167308.  
BIBLIOGRAPHY: *BMMA* 19, Dec. 1924, II, 35, fig. 1; Hayes, *Scepter* I, 214; Bodil Hornemann, *Types of Ancient Egyptian Statuary* II (Copenhagen, 1951) pl. 523; Vandier, *Manuel* III, 234, 265-6; Fischer, *BMMA* NS 17, Feb. 1959, fig. on p. 148.

Found 1923-24 in the "temple *radim* just south of abutment of temple on pyramid." Complete limestone statuette, H. 21.5 cm., of a squatting official, certainly from the temple where it had been dedicated in order to take part in the royal offering rites. The date is probably the end of the Twelfth Dynasty, indicating that the temple was still functioning at that period. A prayer incised on his lap for funerary offerings is addressed to the king: "A boon which Kheperkara gives, that there may be made invocation offerings consisting of [bread and beer, oxen and fowl?] for the *ka* of the hall-keeper and priest Senwosret, born of *S(w?)tj*."

The name and titles of the person seem to indicate that Senwosret was connected with the operation of the mortuary temple of the king.



Fig. 45. Inscription on lap of statuette of Senwosret, MMA 24.1.72. Scale 1:2. See pl. 69a.

- 13 Statue (fig. 44[3.13], pl. 68c[3.13])  
Sources: Tomb card 664.  
PHOTOS: L 33-34, 442 N, 444 K.  
"South pyramid, old material." Two fragments of one or more life-size black granite statues. Fig. 44 shows the fragment of the left side of the wig. A band of narrow ribbing beside the face and neck. The fragment shown in L 33-34, 444 H is of the right wrist with part of a wide bead bracelet in relief.

<sup>288</sup> This archaic type of throne was apparently revived in the time of Senwosret I and his successors; see Hans Gerhard Evers, *Staat aus dem Stein* (Munich, 1929) 47[333], pls. 41, 65, 67, 72-74.

14–16 Statues (fig. 44, pls. 68c, 69c)

Sources: Tomb card 300.

PHOTOS: L 33–34, 440, 442, 444; L 12–13, 281.

“South pyramid east side, old material.” Several fragments of black granite from life-size statues. Inscriptions, borders and other details incised. High polish on all preserved surfaces. Statues of high quality. Tomb card 300 provides the following information:

- Part of the left tab of a long striated wig. Roughly cylindrical in section. Broken at bottom at juncture with left breast. Width at bottom about 8 cms. Striations spaced 9 mm. apart.
- Part of the right chest of a statue(?) with emplacement of wig tab and part of a necklace(?). (fig. 44[3.14], pl. 68c [3.14])
- Part of the extreme right side of the abdomen of a life-size statue, with part of the top of the belt preserved.
- Right foot of a seated statue slightly over life-size. Fragment only. Inside of foot flat and without modeling (pl. 69c [d]).
- Miscellaneous small fragments of the bodies, arms, breasts, legs, etc. of life-size statues. All fragments very small.

f–g and following) Fragments of the thrones of seated statues, with incised block borders, and on one example (f) also an incised inscription (fig. 44 [3.15]).

D. VARIOUS STONE OBJECTS

1 Unknown object: shrine(?) (fig. 44[4.1])

Sources: Tomb card 665 with sketch 1:5.

PHOTO: L 33–34, 442.

Upper right corner of a red granite shrine(?). Inscriptions very shallowly incised with offering formulas on one side and title of the king(?) on the other.

2 Unknown object (fig. 44 [4.2])

Sources: Tomb card 706.

PHOTO: L 12–13, 206.

“South pyramid, old material.” Section of a limestone block with “four roll surfaces on face.” Top roughly smoothed. Joint at bottom and left side. Part of statue, cult object, or architecture?

3a–c Door frame (?) (fig. 44 [4.3a–c])

Sources: Tomb card 666.

“South pyramid, old material.” Three fragments of polished red granite with large incised inscriptions. Fragment probably from a cartouche of the king. The pieces show traces of burning. This fact, together with the shape and the material, suggests that these are fragments of a granite door frame of monumental size, probably from one of the three granite doors of the mortuary temple (see page 42), which could indeed have suffered from the burning of wooden doors.

4 Architectural fragments (fig. 46)

Sources: Tomb cards 707–708 with sketches 1:5.

“Old material.” Six limestone blocks with the surface painted pink in imitation of granite. Block d has a recess 11 cm. deep that is painted in the same way; fragment e has a slight frame-like projection that is also painted pink. The fragments certainly belong to the dado of a wall. Was it the frame of a stela, or of one of the five niches in the rear part of the temple, or did it belong to one of the chapels of a queen’s pyramid?

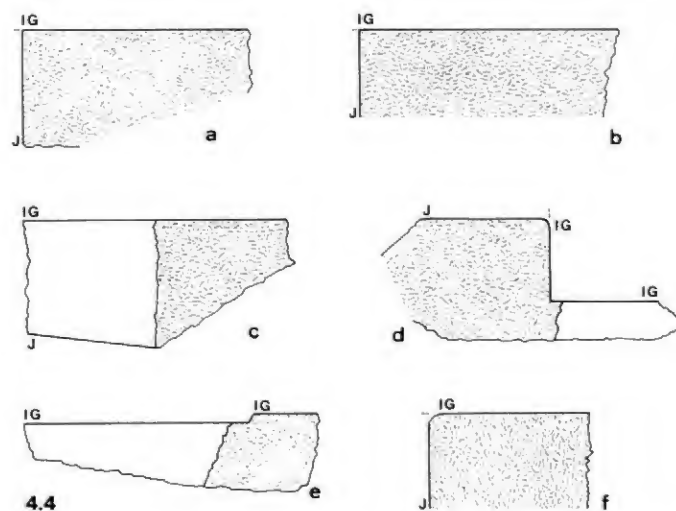


Fig. 46. Architectural fragments, probably from mortuary temple. IG = imitation granite, J = joint. Scale 1:10.

5 Fragmentary building sketch, MMA 14.3.15 (fig. 47)

Sources: Accession card MMA 14.3.15.

PHOTO: Neg. no. 27423.

BIBLIOGRAPHY: Hayes, *Scepter I*, 257.

In the campaign of 1913/14 a small limestone fragment (13 x 19 cm.) was found among the loose fill below the pavement of the mortuary temple. On its surface was painted a sketch of a building in red. It represents an arrangement of courts and side rooms of a larger building which, however, bears no resemblance to the mortuary temple or to any other known structure. It may be the sketch for a priests’ house of the kind found in front of the southwest corner of the inner enclosure wall, at the southeast corner of pyramid 5, and outside the outer court west wall. (These areas will be published later.) The plan was marred by roughly drawn black lines that have no connection with the plan.

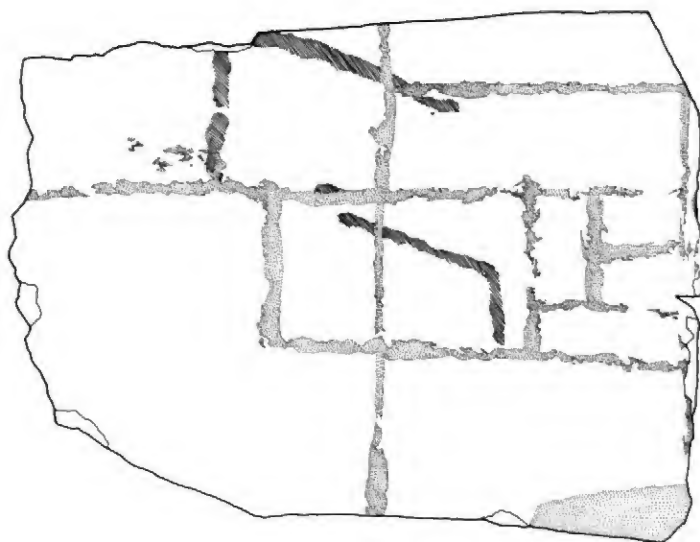


Fig. 47. Construction sketch on a limestone fragment, MMA 14.3.15. Scale 1:2.

## 2. The Bronze Hoard

(figs. 48–51, pls. 70–72)

Sources: Tomb cards 246–267.

Lisht Journal I, 116.

BMMA 29, Nov. 1934, II, 8, figs. 12–13; Hayes, *Scepter* II, 189–190.

PHOTOS: L 33–34, 185–190, 447–449. For MMA photos, see list below.

BIBLIOGRAPHY: Radwan, *Kupfer- und Bronzegefäße*

While searching for fragments of the entrance chapel in 1933/34, the Expedition made an unexpected discovery 36 m. west of the pyramid entrance and 1.30 m. in front of the line of the pyramid foot. There, resting above the pavement level on 28 cm. of sand and chip, an abandoned basket was found beside a fragment of a broken backing stone for the pyramid casing. Closer inspection showed that it was not a workman's basket of the kind found rather frequently, but contained a sealed linen bundle holding a collection of about 70 bronze and copper vessels, tools, and bits of sheet and raw metal.

Most of the vessels had been crushed and the tools bent back on themselves so that they would take up less room. This fact and the selection of objects made it clear that the objects had been collected not for their usefulness but for the value of their metal. Perhaps the basket belonged to a coppersmith or metal-dealer and had been lost or forgotten under an avalanche of debris from the pyramid. The position of the find in the middle of the debris and above the foundations of the pyramid shows that the basket was hidden after the destruction of the pyramid foundations. Some pieces seem to be of probable Middle Kingdom origin, but most were made in the New Kingdom; Hayes suggested the Thutmoside period. It may be assumed that the seal with the name of Tutankhamun (see fig. 50) shows that the basket could not have been hidden before the end of the Eighteenth Dynasty, thus giving welcome confirmation for the date of the destruction of the pyramid casing.<sup>289</sup> The question remains, however, how a junk-dealer could have come into possession of a royal seal.

The find was divided between the Metropolitan Museum of Art and the Egyptian Museum Cairo. No attempt has been made so far to restore the objects to their original shapes, and therefore no final drawings or photographs of the objects can be given here. The drawings of figs. 49–51 were made by the Metropolitan Museum from the distorted metal pieces and must therefore be used with caution.

### LIST OF OBJECTS

#### MMA 34.1.45. Basket

L. 59 cm.; H. 38 cm. Photos: L 33–34, 449; neg. no. 98315.

The basket is composed of a rectangular mat (pl. 70 c) folded once transversely with the side edges woven together. The material is grass-rope (2-, 3-, and 4-ply) with a standard strand diameter of 3 mm. "The horizontal warp is of 2-ply grass-rope, 6 mm. in diameter. The weft strands, spaced 3–3.5 cm. apart, are of the same 2-ply rope. Both warp and weft strands are doubled. The weft strands pass over and under the pairs of warp ropes in both senses, and are given a single twist between the warp strands. At the rim (of 3-ply rope), the weft strands are passed back, down, and into the web of the basket again, running down to distances of 5–11 cm.; in other words, to these distances below the rim, the weft is redoubled.

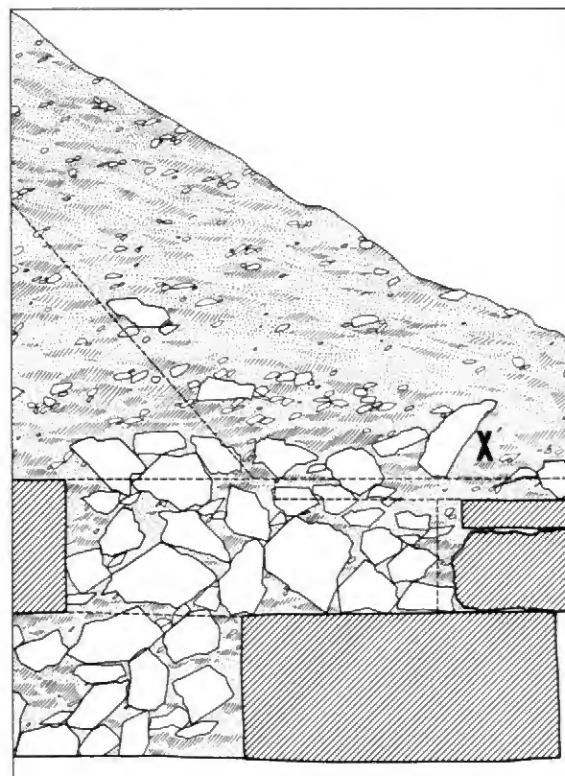


Fig. 48. Position (X) of bronze hoard in debris of north side of main pyramid. No scale. See pl. 70a.

A pair of 2-ply ropes passes up the edges of the basket on the inside, and it is to these ropes that the edges of the basket are attached. At the rim these two ropes are twisted into a single 4-ply rope 11 mm. in diameter which, after being knotted about the rim corners, passes down the exterior of the basket, and is lashed to the edges of the basket in four or five places with the lengths of the 3-ply rope. These heavy ropes form a series of loops along the edges of the basket that were probably used for lashing the basket to a donkey, or for carrying purposes in general. The ends of the ropes hang down below the bottom of the basket and are tied with a knot.

MMA 34.1.46. Linen bundle with seal impression (fig. 50, pl. 70c)

L. of impression 20 mm. Photos: neg. no. 98316, L 33–34, 449. Hayes, *Scepter* II, 301.

Two pieces of coarse linen, roughly square. The outer piece very coarse and loosely woven, the inner piece somewhat more tightly woven and fringed. The ends of the linen were roughly bunched together at the top and the neck of the bundle was lashed with three strands of twisted linen twine. These strands were not tied, but fastened where the ends cross one another by a piece of gray Nile mud that had been impressed with a scarab while wet. The name, as Geoffrey Martin who kindly examined the seal for us in 1986 ascertained, is certainly that of Tutankhamun, in spite of the badly shaped plural signs.

MMA 34.1.47. Ring stand (fig. 51 [32], pl. 72a)

H. 5.5 cm.; Diam. 12 cm. Radwan, *Kupfer- und Bronzegefäße* 70 no. 458, pl. 79 ("Eighteenth Dynasty"). Photos: L 33–34, 447; neg. no. 98164.

Made in one piece from a section of a very thin-walled copper tube. No traces of seams. Upper and lower rims slightly bent in places; otherwise undistorted.

<sup>289</sup> In the ruins of a house at Kahun, Petrie discovered a similar hoard of broken bronze tools which are dated by a papyrus to the period after Amenhotep III (Petrie, *Illahun* 15, pl. 13).

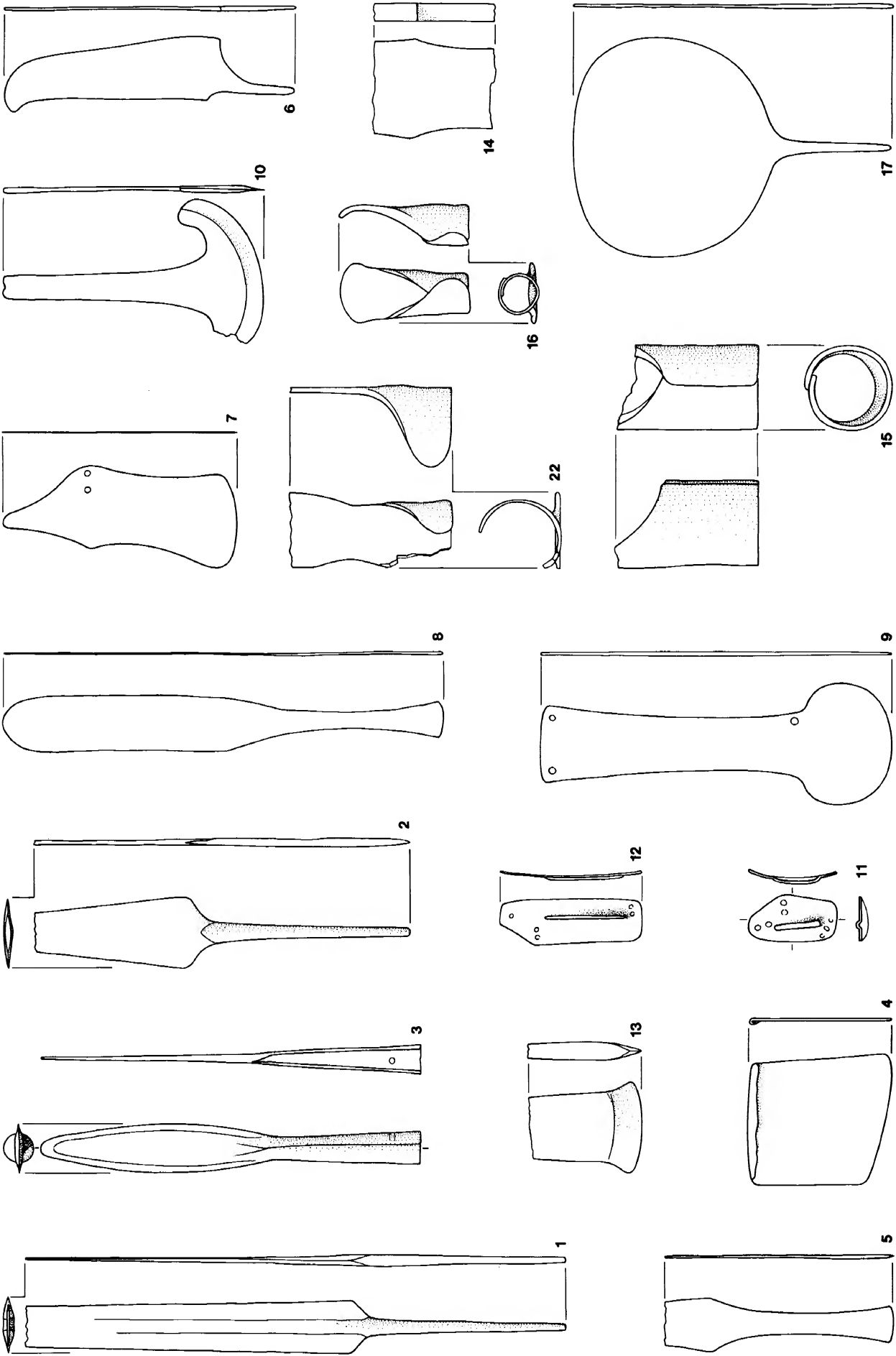


Fig. 49. Tools and weapons from bronze hoard. Scale 1:3. See pls. 71-72.



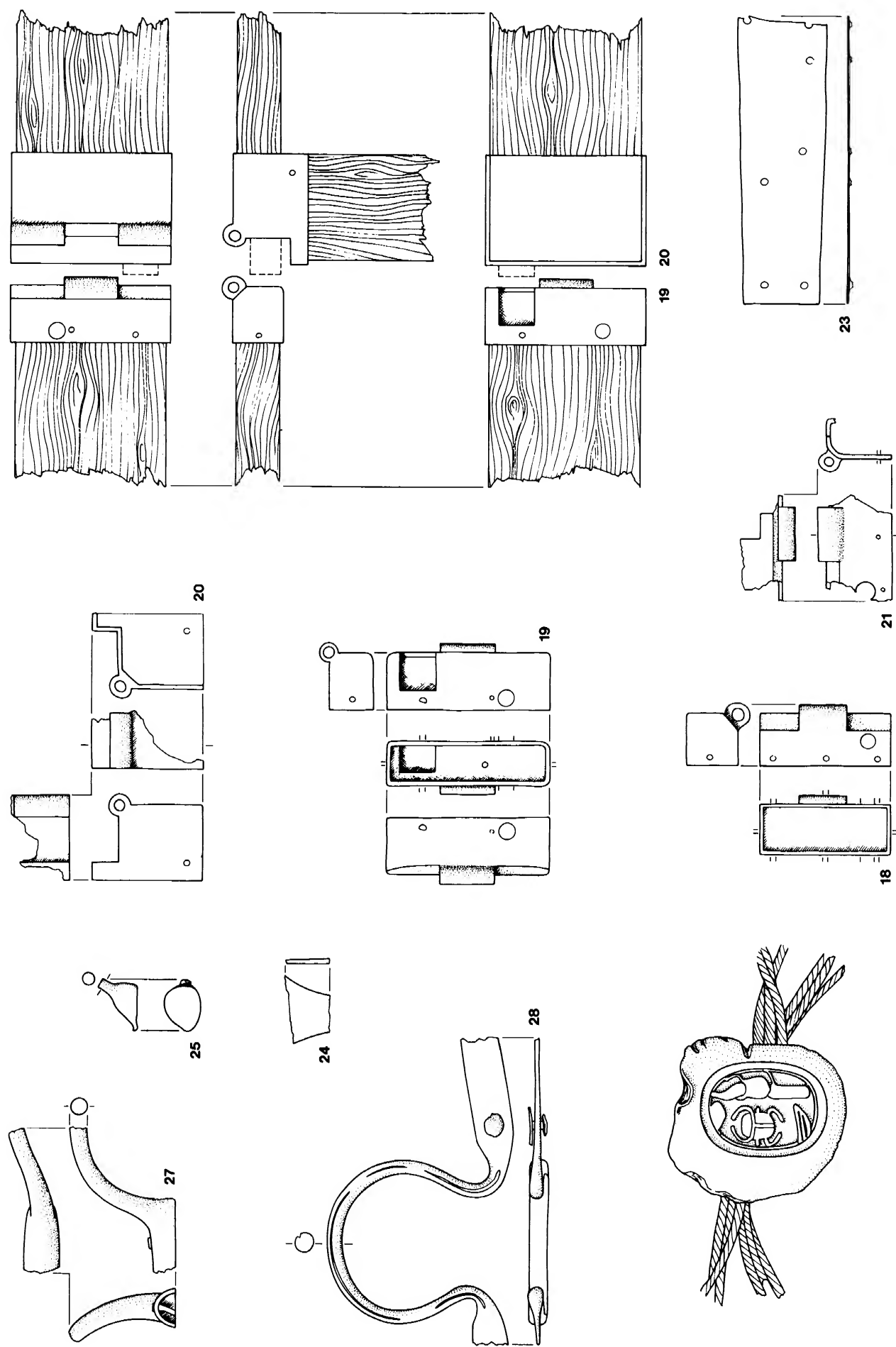


Fig. 50. Handles of bronze vessels, door-hinges, and the seal impression with the name of Tutankhamun. Scale 1:3. 5, except seal, 1:1. See pls. 71-72.

MMA 34.1.48. Knife (fig. 49 [6], pl. 71A)  
L. 16.25 cm.; W. 3.8 cm. Photos: L 33-34, 447; neg. no. 98165.  
Cut from one piece of medium heavy sheet copper. Tang and back of blade thicker than rest. Blade tapers to very thin edge on right. Found bent double.

MMA [34.1.49.] Dagger blade (fig. 49 [2], pls. 71a, 72b)  
L. 20.3 cm.; W. 3 cm. Photo: neg. no. 98166  
Copper beaten into shape. Top of blade broken off. Both blade and tang bent double when found.

MMA 34.1.50. Knife(?) (fig. 49[8], pl. 71A)  
L. 24.5 cm.; W. 3 cm. Photos: L 33-34, 447; neg. no. 98167.  
Sheet copper; blade beaten thin with fine edge on top and sides. Tang thicker. Found with the blade bent to an oblique angle at its center.

MMA 34.1.51. Razor (fig. 49[7], pl. 71A)  
L. 13 cm.; W. 5.6 cm. Photos: L 33-34, 447; neg. no. 98185.  
Cut from one piece of very thin sheet copper. Bottom thinned to very fine edge. Holes near haft punched through, the projecting flanges subsequently filed away on the back. Found bent over twice lengthwise.

MMA 34.1.52. Knife (fig. 49[10], pl. 71A)  
L. 14.5 cm.; W. 8 cm. Photos: L 33-34, 447; neg. no. 98186.  
Probably leather worker's tool. Heavy sheet copper beaten into shape. Fine edge along bottom, with concave bevel on both sides. Found with one end broken off and the opposite tip (thin) bent back flat against the blade.

MMA 34.1.53. Scraper(?) (fig. 49[4], fig. 71A)  
L. 8 cm.; W. 7.25 cm. Photos: L 33-34, 447; neg. no. 98187.  
Cut from one piece of fairly heavy sheet copper. Edge at top bent over to form rounded gripping edge. Bottom rounded to form dull cutting edge. Found undamaged and untwisted.

MMA [34.1.54]. Chisel(?) (fig. 49[14], pl. 71A)  
L. 6.5 cm.; W. 5.5 cm. Photos: L 33-34, 447; neg. no. 98188.  
Fragment of large chisel(?). Heavy casting.

MMA [34.1.55]. Chisel (fig. 49[13], pl. 71A)  
L. 6.4 cm.; W. 5 cm. Photos: L 33-34, 447; neg. no. 98189.  
Tip of large chisel. Heavy casting. Edge with slight concave bevel beaten into both sides.

MMA [34.1.56]. Knife(?) (fig. 49[5], pl. 71A)  
L. 12.8 cm.; W. 3.0 cm.  
One piece of medium heavy sheet copper. The blade thinner than the haft. Found with most of the blade broken off and the haft bent double.

MMA [34.1.56]. Knife(?)  
L. 7.0 cm.; W. 3.0 cm. Photos: L 33-34, 447; neg. no. 98186  
Fragment of knife?

MMA 34.1.57. Mirror (fig. 49[17], pl. 71A)  
L. 18 cm.; W. 12.5 cm. Photos: L 33-34, 447; neg. no. 98190.  
Appears to be cast rather than cut from a sheet. Thins slightly toward the top, growing still thinner around edges of plate. Fairly well oxidized. Not bent or otherwise damaged.

MMA [34.1.58]. Hinge<sup>290</sup> (fig. 50 [21], pl. 71A)  
L. 6.5 cm.; W. 4.25 cm. Photos: L 33-34, 447; neg. no. 98169.  
Fragment of hinge. As in the other hinges in the hoard, boxes beaten into shape from single pieces with a seam at each of the two diagonal corners. Rivet and nail holes drilled. Cylinder soldered on.

MMA 34.1.59. Hinge (fig. 50[19], pls. 71A, 72c)  
L. 9.25 cm.; W. 3.25 cm. Photos: L 33-34, 447; neg. no. 98170.

As above. Slot sawn out. Reconstructed in diagram in working position.

MMA 34.1.60. Hinge (fig. 50[20], pls. 71A, 72d)  
L. 6.25 cm.; W. 4.25 cm. Photos: L 33-34, 447; neg. no. 98171.  
Fragment of hinge, as above. Well made, with square corners. Reconstructed in diagram in working position.

MMA 34.1.61. Small vase (fig. 51[33], pls. 71A, 72e)  
H. 7 cm. Diam. 6.5 cm. Radwan, *Kupfer- und Bronzegefäße* 99 no. 178, pl. 50 ("18th Dynasty"). Photos: L 33-34, 447; neg. no. 98172.

Made in one piece. Rim formed by turning back top edge. Very thin walls. Found bent and slightly flattened on one side; otherwise undistorted.

MMA 34.1.62. Handle of vessel (fig. 50[28], pl. 71B)  
L. 17.25 cm. Photos: L 33-34, 448; neg. no. 98291.  
Half of the handle of a large bowl. Beaten from one piece. Heavy rivet through right shank-plate, its inner end soldered to a fragment of plate copper (piece of the wall of the bowl).

MMA 34.1.63. Situla (fig. 51[31], pl. 51)  
H. 17.75 cm.; W. 20 cm. as crushed, 13 cm. Photos: L 33-34, 448; neg. no. 98292.

Larger example of type of Cairo 63 913, but with lower neck, more flaring rim. Loop handle missing. Rim, handles, and rings made in separate pieces and soldered. Flattened and folded in the same manner as Cairo JdE 63 913.

MMA [34.1.64]. Fragment of situla (fig. 51[34], pls. 51, 71B)  
Photos: L 33-34, 448; neg. no. 98293.

Fragment of a situla with a prominent rim. Rim formed by turning over top edge. Punched with two holes for handle(?) just below rim. So flattened, bent, and broken that reconstruction uncertain. Has been cut into pieces with shears.

MMA [34.1.65]. Fragment of bowl  
L. 16 cm.; W. 13 cm. Photos: L 33-34, 448; neg. no. 98294.

MMA [34.1.66]. Fragment of a pot (fig. 51[30], pls. 51, 71B)  
H. 16 cm.; Diam. 24.25 cm. Photos: L 33-34, 448; neg. no. 98295.

Large, round-bellied pot with rivet hooks for the attachment of horizontal handles. Found in two pieces: the upper part flattened, broken through vertically; the bottom folded once horizontally. So flattened and twisted that reconstruction uncertain. Made from one piece of sheet copper of medium thickness. Rivets driven through walls from inside and bent over on exterior to form hooks for the attachment of the handles; two sets visible, not on opposite sides of rim circumference.

MMA [34.1.67]. Hoe blade(?) (fig. 49[15], pl. 71A)  
L. 8 cm.; Diam. 4.75 cm. Photos: L 33-34, 447; neg. no. 98296.  
Larger and heavier than similar pieces fig. 49[16] and fig. 49[22]. Cut from pieces of sheet copper of varying thickness, the side projections then bent to form a cylindrical haft. Blade cut in one piece. Walls of the haft cylinder beaten thinner than the blade.

MMA [34.1.68]. Hoe-blade(?) (fig. 49[22], pl. 71A)  
L. 9.25 cm.; W. 4.4 cm. Photos: L 33-34, 447; neg. no. 98276.  
Fragment of hoe blade, same as [34.1.67].

<sup>290</sup> For another example of hinges from the Eighteenth Dynasty see Petrie, *Illahun* 19, pl. 20 [10].

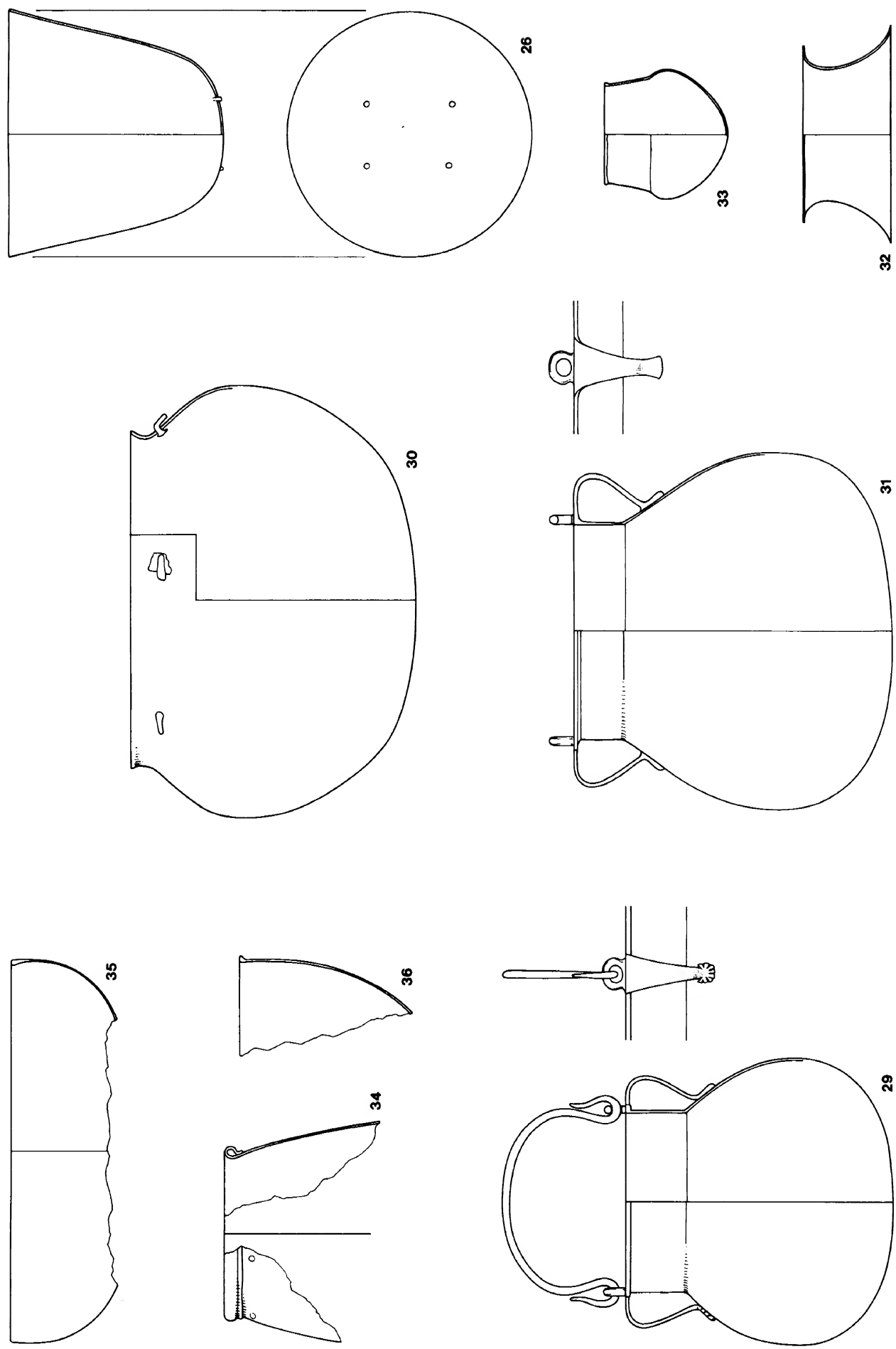


Fig. 51. Bronze vessels from the bronze hoard. Scale 1:3.5. See pls. 71–72.

MMA [34.1.69]. Fragment of handle (fig. 50[27], pl. 71B)  
L. 8 cm.; W. 1 cm. Photos: L 33-34, 447; neg. no. 98297.  
Handle of a large vase or bowl. Shaft solid, haft hollow and  
with heavy rivet driven through its top. Made in one piece.

MMA [34.1.70]. Fragments of bronze strip  
A) 4 x 2.5 cm. B) 4 x 2 cm. C) 2.5 x 2.5 cm. Photos: L  
33-34, 448; neg. no. 98298.

MMA 34.1.71. Blade of tool (hoe?) (fig. 49[16], pl. 71A)  
L. 7 cm.; W. 3.5 cm. Photos: L 33-34, 447; neg. no. 98277.  
Similar to fig. 49[15] and fig. 49[22] but complete. Found stuck  
to a lump of raw copper and with a thin copper strip (2.7 cm.  
wide) wrapped twice around its half.

MMA [34.1.72]. Corselet plate<sup>291</sup> (fig. 49[12], pls. 71A, 72g)  
A) 8 x 2.5 cm. B) 2 x 2.5 cm. Photos: L 33-34, 447; neg. no.  
98299.

Similar to fig. 49[11]. Two fragments of medium thin sheet  
copper, the ridges on the exterior beaten or stamped out from  
the back. Holes punched, flanges at back filed off flat. Both  
plates have slight longitudinal curve. Found stuck to hinge fig.  
50[20] and object fig. 50[24].

MMA 34.1.73. Corselet plate (fig. 49[11], pls. 71A, 72f)  
5 x 2.6 cm. Photos: L 33-34, 447; neg. no. 98278.  
Similar to fig. 49[12]. Found slightly bent under.

MMA [34.1.74]. Fragment of bowl (fig. 51[36])  
L. 11.5 cm.; W. 7.5 cm. Photos: L 33-34, 448; neg. no. 98300.  
Fragment of deep bowl with the rim and upper profile too  
flattened and fragmentary to permit reconstruction.

MMA [34.1.75]. Fragment of vessel  
L. 8 cm.; W. 8 cm. Photos: L 33-34, 448; neg. no. 98301.

MMA [34.1.76]. Fragment of tool (fig. 50[24], pl. 71A)  
3.75 x 2.5 cm. Photos: L 33-34, 447; neg. no. 98279.  
Fragment of the blade of an unidentified tool. Fairly heavy sheet  
copper, thickness diminishing slightly toward the top. Top and  
bottom edges broken.

MMA [34.1.77]. Fragment of vessel  
L. 13 cm.; W. 12 cm. Photos: L 33-34, 448; neg. no. 98302.

MMA [34.1.78]. Fragment of vessel  
L. 16.5 cm. W. 12 cm. Photos: L 33-34, 448; neg. no. 98173.

MMA [34.1.79]. Part of vessel (fig. 51[35])  
7 x 19 cm.; Diam. 21.5 cm. Photos: L 33-34, 448; neg. no.  
98174.

Large, shallow, fragmentary bowl. Beaten to shape from one  
piece, the rim left much thicker than the walls. Flattened side-  
ways, then folded twice sideways. Reconstruction uncertain;  
shallow profile suggested by wide vertical splits running up  
bottom edges of presently folded and flattened bowl. Bottom  
missing.

MMA [34.1.80]. Vessel fragment  
12 x 17 cm. Photos: L 33-34, 448; neg. no. 98175.

MMA [34.1.81]. Vessel fragment  
10 x 9 cm. Photos: L 33-34, 448; neg. no. 98175.

MMA [34.1.82]. Vessel fragment  
12.2 x 9 cm. Photos: L 33-34, 448; neg. no. 98175.

MMA [34.1.83]. Strip of copper (fig. 50[23])  
16 x 5 cm. Photos: L 33-34, 448; neg. no. 98175.  
Strip of very thin copper, with seven roughly punched holes.

MMA [34.1.84]. Vessel fragment  
9 x 8 cm. Photos: L 33-34, 448; neg. no. 98175.

MMA [34.1.85]. Vessel fragment  
9 x 6.5 cm. Photos: L 33-34, 448; neg. no. 98176.

MMA [34.1.86]. Vessel fragment  
10 x 7 cm. Photos: L 33-34, 448; neg. no. 98176.

MMA [34.1.87]. Vessel fragment  
8 x 6 cm. Photos: L 33-34, 448; neg. no. 98176.

MMA [34.1.88]. Vessel fragment  
12 x 6 cm. Photos: L 33-34, 448; neg. no. 98176.

MMA [34.1.89]. Vessel fragment  
12 x 8 cm. Photos: L 33-34, 448; neg. no. 98176.

MMA [34.1.90]. Vessel fragment  
13 x 8 cm. Photos: L 33-34, 448; neg. no. 98177.

MMA [34.1.91]. Vessel fragment  
11 x 4.5 cm. Photos: L 33-34, 448; neg. no. 98177.

MMA [34.1.92]. Vessel fragment  
10 x 6 cm. Photos: L 33-34, 448; neg. no. 98177.

MMA [34.1.93]. Vessel fragment  
15 x 6 cm. Photos: L 33-34, 448; neg. no. 98177.

MMA [34.1.94]. Vessel fragment  
10 x 8 cm. Photos: L 33-34, 448; neg. no. 98177.

MMA [34.1.95]. Vessel fragment  
7 x 5 cm. Photos: L 33-34, 448; neg. no. 98178.

MMA [34.1.96]. Vessel fragment  
8.5 x 6.5 cm. Photos: L 33-34, 448; neg. no. 98178.

MMA [34.1.97]. Vessel fragment  
7 x 6 cm. Photos: L 33-34, 448; neg. no. 98178.

MMA [34.1.98]. Vessel fragment  
8 x 5.5 cm. Photos: L 33-34, 448; neg. no. 98178.

MMA [34.1.99]. Vessel fragment  
8 x 6 cm. Photos: L 33-34, 448; neg. no. 98178.

MMA [34.1.100]. Vessel fragment  
9 x 6 cm. Photos: L 33-34, 448; neg. no. 98280.

MMA [34.1.101]. Vessel fragment  
7 x 4 cm. Photos: L 33-34, 448; neg. no. 98280.

MMA [34.1.102]. Vessel fragment  
6 x 3.5 cm. Photos: L 33-34, 448; neg. no. 98280.

MMA [34.1.103]. Vessel fragment  
7 x 5 cm. Photos: L 33-34, 448; neg. no. 98280.

MMA [34.1.104]. Vessel fragment  
6 x 4.5 cm. Photos: L 33-34, 448; neg. no. 98280.

MMA [34.1.105]. Vessel fragment  
5.5 x 5 cm. Photos: L 33-34, 448; neg. no. 98281.

MMA [34.1.106]. Vessel fragment  
7.5 x 5 cm. Photos: L 33-34, 448; neg. no. 98281.

MMA [34.1.107]. Vessel fragment  
11 x 3 cm. Photos: L 33-34, 448; neg. no. 98281.

<sup>291</sup> Similar scales from armored skirts are cited by Herbert E. Winlock, *The Rise and Fall of the Middle Kingdom in Thebes* (New York, 1947) 163 as the earliest known examples, probably from the time of Amenhotep III; they would coincide with the date of our bronze hoard.

MMA [34.1.108]. Vessel fragment  
 7 x 3.5 cm. Photos: L 33–34, 448; neg. no. 98281.

MMA [34.1.109]. Vessel fragment  
 7 x 4 cm. Photos: L 33–34, 448; neg. no. 98281.

MMA 34.1.110. Fragment of bronze (pl. 50[25])  
 L. 3 cm. W. 2.5 m. Photos: L 33–34, 448; neg. no. 98282.  
 Rough solid casting. Probably base of vase handle.

MMA 34.1.111. Lump of raw copper  
 Photos: L 33–34, 448; neg. no. 98283.

Cairo JdE 63 909. Dagger blade(?) (pl. 49[1])  
 L. 30.25 cm. W. 3.0 cm.  
 Beaten into shape. Found with blade broken off and bent to a flat S. Tang bent double.

Cairo JdE 63 910. Spearhead (fig. 49[3], pl. 71A)  
 L. 21.25 cm.; W. 2.75 cm.  
 Spearhead with hollow haft. One beaten piece. Rivet hole through side of haft near bottom. Blade bent double so that tip is near base of haft.

Cairo JdE 63 911. *Mnjt* (fig. 49[9], pl. 71A)  
 L. 19.5 cm.; W. 6.75 cm.  
 Counterpoise for necklace. Cut from piece of heavy sheet copper. Holes for attachment drilled. Found complete and untwisted.

Cairo JdE 63 912. Hinge (fig. 50[18], pl. 71A)  
 L. 7.5 cm.; W. 2.9 cm.  
 Hinge similar to pl. 71A, fig. 50 [19–21].

Cairo JdE 63 913. Situla (fig. 51[29], pl. 71B)<sup>292</sup>  
 H. without handle 15 cm. Diam. 16 cm. Radwan, *Kupfer- und Bronzegefäße* 147 no. 407, pl. 71 (“18th Dynasty”).  
 Situla with loop and side handles. Rim one piece with body, turned to shape. Handles and rings soldered on. Base and side handles incised to resemble rosettes. Loop handle is simply a bent length of copper wire. Found completely flattened, and bent once in the middle vertically.

Cairo JdE 63 914. Stand base (fig. 51[26], pl. 71B)  
 H. 12 cm. Diam. 14 cm. Radwan, *Kupfer- und Bronzegefäße* 144, no. 404, pl. 71 (“18th Dynasty”).  
 Base or top of a stand. Four rivet holes (two with rivets in place) in the bottom; surrounding three of these holes, the imprint of a circular shaft or the like to which the “cup” was riveted. Beaten of one piece from very thin sheet copper.

<sup>292</sup> Reconstructed with the help of Friedrich Wilhelm von Bissing, *Metallgefäße* (CG. nos. 3426–3587; Vienna, 1901) 30–31 no. 3469, to which the type clearly belongs (dated “19th Dynasty?”).

CHAPTER XII

Pottery

BY DOROTHEA ARNOLD

In this first volume of the publication of the south pyramid and cemetery at Lisht, no final study of the pottery from the site can be attempted. What the following pages offer is a framework of the ceramic development in the earlier Twelfth Dynasty based on the finds of the Expedition during the original excavations of the pyramid of Senwosret I and its precinct, and on pottery found more recently during the re-clearing of 1984–1985. The main purpose of this framework is to provide for the future a means of dating chronologically undetermined groups of objects or monuments at Lisht.

The pottery included in the study is confined for the most part to that from the areas treated in this volume, i.e., the inner court, the pyramid of the king, and the area of the northwest corner of the causeway. Three groups found outside these areas, however, are also included: the “entrance cut” deposit pottery, the pottery from the two westernmost deposits in the south of the outer court, “southwall deposits” 1 and 2 and the pottery found in a dump on top of the remains of a building road uncovered in the southeastern area of the cemetery, south of the causeway. It will be seen that it was necessary to include these groups in order to establish the chronology of the others presented here.

The pots found in conjunction with the late Twelfth and Thirteenth Dynasty *shabtis* in the northwest corner of the causeway have been dealt with in connection with these objects (pp. 36, 39–40). Chronologically, they belong outside the range of the framework presented here, and are therefore not included in the following chapter.

1. List of Pottery Groups  
(For the fabric and ware descriptions, see pp. 124–135.)

A. POTS FOUND IN THE SOUTHEAST FOUNDATION  
DEPOSIT OF THE MAIN PYRAMID

Sources: Tomb cards 154–155.  
BMMA 28, April 1933, II, 11.  
PHOTOS: L 31–32, 233 (here pl. 60d).  
For the archaeological context, see page 87, fig. 32, and pl. 60a. Drawings after the tomb cards; here fig. 52. Descriptions follow the indications on the tomb cards.  
Pots in the Oriental Institute, University of Chicago.

Medium-sized, round-bottomed plates:  
MMA [32.1.90]: W. 19.5 cm. Fig. 52, no. 1. Neg. no. 89508.  
MMA [32.1.91A]: W. not measured. Fig. 52, no. 1. Neg. no. 89543.  
Both of Nile clay, fabric B 2, self-slipped. Thrown, bottom fashioned by hand. The plate [32.1.91A] contained a thick, dark

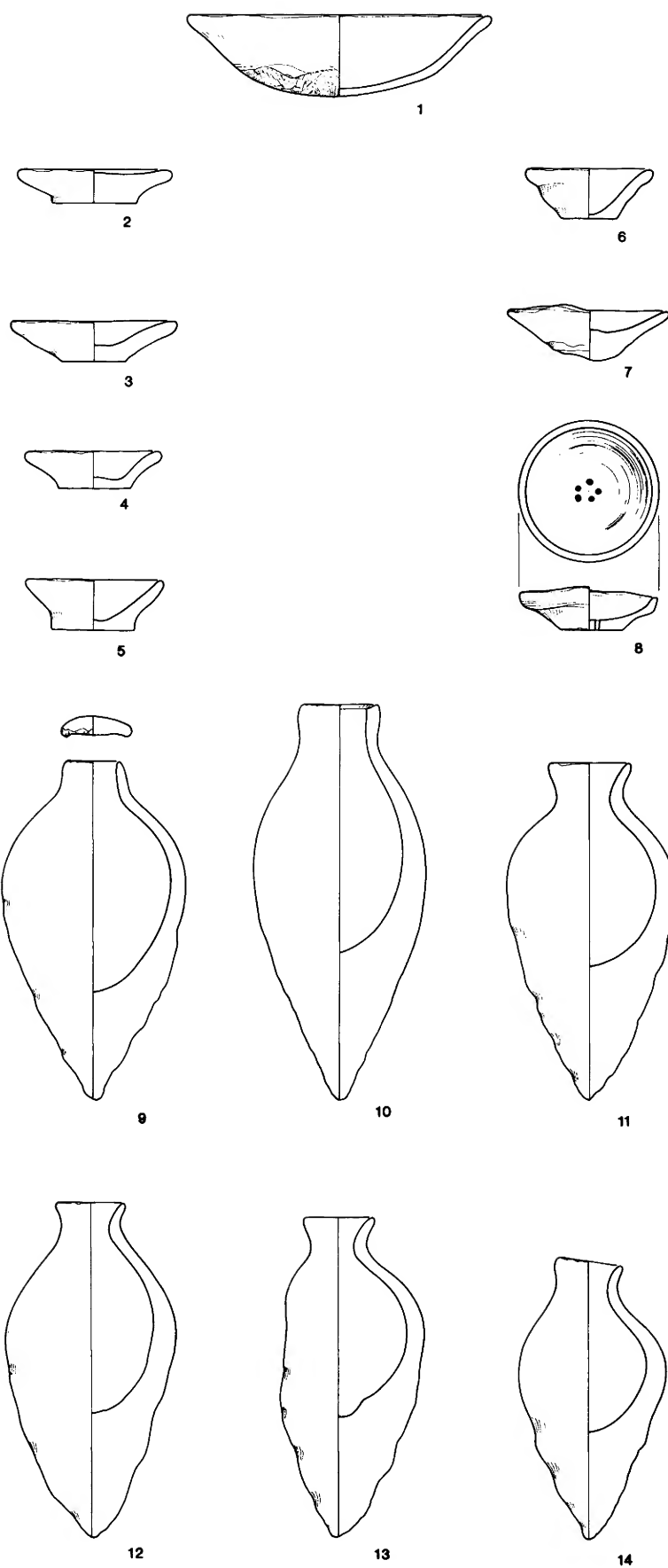


Fig. 52. Pottery found in the southeast foundation deposit of the pyramid. Scale 1:4. See pl. 60d.



brown, coarse-grained crust [32.1.91B], which later broke into five pieces.

*Small, footed plates:*

MMA [32.1.65]: W. 8 cm. Neg. no. 89443; fig. 52, no. 5.  
MMA [32.1.66]: W. 8.5 cm. Neg. no. 89444; fig. 52, no. 4.  
MMA [32.1.67]: W. 7.5 cm. Neg. no. 89445; like fig. 52, no. 5.  
MMA [32.1.68]: W. 8 cm. Neg. no. 89446; fig. 52, no. 3.  
MMA [32.1.69]: W. 10 cm. Neg. no. 89447 (round bottomed).  
MMA [32.1.70]: W. 8.5 cm. Neg. no. 89448; like fig. 52, no. 2.  
MMA [32.1.71]: W. 9 cm. Neg. no. 89449; like fig. 52, no. 3.  
MMA [32.1.72]: W. 9 cm. Neg. no. 89450; fig. 52, no. 7.  
MMA [32.1.73]: W. 10 cm. Neg. no. 89451; like fig. 52, no. 3.  
MMA [32.1.74]: W. 8 cm. Neg. no. 89452; like fig. 52, no. 3.  
MMA [32.1.75]: W. 8.5 cm. Neg. no. 89453; fig. 52, no. 2.  
MMA [32.1.77]: W. 9 cm. Neg. no. 89455; like fig. 52, no. 2.  
MMA [32.1.78]: W. 8.5 cm. Neg. no. 89456; like fig. 52, no. 2.  
MMA [32.1.79]: W. 8.5 cm. Neg. no. 89457; like fig. 52, no. 2.  
MMA [32.1.80]: Field slip 32Lo52, discarded, number withdrawn.  
MMA [32.1.81]: W. 9 cm. Neg. no. 89458; like fig. 52, no. 3.  
MMA [32.1.82]: W. 9 cm. Neg. no. 89459; like fig. 52, no. 2.  
MMA [32.1.83]: W. 10 cm. Neg. no. 89460; like fig. 52, no. 2 but with overhanging lip.  
MMA [32.1.84]: W. 8.5 cm. Neg. no. 89461; like fig. 52, no. 2.  
MMA [32.1.85]: W. 7.5 cm. Neg. no. 89462; fig. 52, no. 6.  
MMA [32.1.86]: Field slip 32Lo52, discarded, number withdrawn.  
MMA [32.1.87]: W. 9 cm. Neg. no. 89463; like fig. 52, no. 2.  
MMA [32.1.88]: W. 9 cm. Neg. no. 89464; like fig. 52, no. 2.  
MMA [32.1.89]: Field slip 32Lo52, discarded, number withdrawn.

All these small plates are of Nile clay, fabric B 2 and partially self-slipped. They were probably thrown from the "hump" and rather carelessly taken off, so that many were distorted. Bases string- (or wire-) cut.

*Small, plate-like sieve:*

MMA [32.1.76]: W. 8.5 cm. Neg. No. 89454 (here fig. 52, no. 8).

Five holes are bored vertically into the bottom of a plate like those listed above; the plate has a vertical rim. Material and technique as above. The piece is clearly a model, not a usable piece of equipment.

*Medium-sized bottles with pointed bottoms:*

MMA [32.1.50]: H. 19 cm. Neg. no. 89510; fig. 52, no. 11.  
MMA [32.1.51]: H. 19.5 cm. Neg. no. 89511; fig. 52, no. 13.  
MMA [32.1.52]: H. 19 cm. Neg. no. 89507; fig. 52, no. 9.  
MMA [32.1.53]: H. 19 cm. Neg. no. 89512; like fig. 52, no. 9.  
MMA [32.1.54]: H. 20 cm. Neg. no. 89555; fig. 52, no. 12.  
MMA [32.1.55]: H. 18.5 cm. Neg. no. 89513; like fig. 52, no. 11.  
MMA [32.1.56]: H. 17.5 cm. Neg. no. 89514; like fig. 52, no. 11.  
MMA [32.1.57]: H. 22.5 cm. Neg. no. 89548; fig. 52, no. 10.  
MMA [32.1.58]: H. 15.5 cm. Neg. no. 89515; fig. 52, no. 14.  
MMA [32.1.59]: H. 17.5 cm. Neg. no. 89549; like fig. 52, no. 9.  
MMA [32.1.60]: H. 21 cm. Neg. no. 89550; like fig. 53, no. 12.  
MMA [32.1.61]: H. 19 cm. Neg. no. 89551; like fig. 52, no. 9.

The bottles are of Nile clay fabric B 2; the upper parts are mostly

self-slipped. Thrown. The pointed bottoms are handmade, with many bruises on the outside and inside.

Three bottles were covered by flat, round cakes of unfired Nile clay, which were applied when still wet, so that the rims of the bottles are impressed on the underside of the stoppers. These stoppers were numbered as:

MMA [32.1.62-.64]. Size, according to inventory card: -.62: 3.5 cm.; -.63: 3.5 cm.; -.64: 4.5 cm. Neg. no. 89468.

Despite the presence of stoppers, no contents were noted in the jars. Five bottles were found broken [32.1.54; -.56; -.57; -.59 -.61], the fragments scattered over the deposit floor.

The bottles differ somewhat in size (MMA [32.1.57] is the largest and [-.56, -.58, -.59] are the smallest) and in the shape of the necks. MMA [32.1.52], [-.53], [-.59] and [-.61] have necks narrowing towards the top, [-.57] has a bulging neck, and the neck of [-.60] is straight and set off from the shoulder by a groove. The necks of the other bottles are conical.

B. POTS FOUND IN THE SOUTHWEST FOUNDATION  
DEPOSIT OF THE MAIN PYRAMID

MMA [32.1.5-.16]; [32.1.17-.40].

Sources: Tomb cards 166-167.

BMMA April 28, 1933, II, 11; 9, fig. 6 (view of pots in hole)

PHOTOS: L 32-32, 157 (here pl. 61d).

For the archaeological context of the whole deposit, see page 88, fig. 33, and pl. 61a. Drawings after the tomb cards; here fig. 53. Descriptions follow the indications on the tomb cards. Pots in the Oriental Institute, University of Chicago.

*Small, footed plates:*

MMA [32.1.17]: W. 8.5 cm. Neg. no. 89404; fig. 53, no. 8 (larger).  
MMA [32.1.18]: W. 8.5 cm. Neg. no. 89405; like fig. 53, no. 8.  
MMA [32.1.19]: W. 8 cm. Neg. no. 89406; like fig. 53, no. 8.  
MMA [32.1.20]: W. 8.5 cm. Neg. no. 89407; like fig. 53, no. 8.  
MMA [32.1.21]: W. 9 cm. Neg. no. 89408; like fig. 53, no. 2.  
MMA [32.1.22]: W. 9 cm. Neg. no. 89409; like fig. 53, no. 3.  
MMA [32.1.23]: W. 9 cm. Neg. no. 89410; like fig. 53, no. 3.  
MMA [32.1.24]: Fieldslip 32Lo16, discarded and number withdrawn.  
MMA [32.1.25]: W. 10 cm. Neg. no. 89412; like fig. 53, no. 2.  
MMA [32.1.26]: W. 10 cm. Neg. no. 89413; like fig. 53, no. 1.  
MMA [32.1.27]: W. 11 cm. Neg. no. 89414; like fig. 53, no. 1.  
MMA [32.1.28]: W. 10 cm. Neg. no. 89415; like fig. 53, no. 7.  
MMA [32.1.29]: W. 9 cm. Neg. no. 89416; like fig. 53, no. 2.  
MMA [32.1.30]: W. 7.5 cm. Neg. no. 89417; like fig. 53, no. 5.  
MMA [32.1.31]: W. 9 cm. Neg. no. 89418; like fig. 53, no. 3.  
MMA [32.1.32]: W. 8.5 cm. Neg. no. 89419; like fig. 53, no. 3.  
MMA [32.1.33]: W. 8.5 cm. Neg. no. 89420; like fig. 53, no. 3.  
MMA [32.1.34]: W. 8.5 cm. Neg. no. 89421; like fig. 53, no. 3.  
MMA [32.1.35]: W. 8 cm. Neg. no. 89422; fig. 53, no. 4.  
MMA [32.1.36]: W. 10 cm. Neg. no. 89423; like fig. 53, no. 3.  
MMA [32.1.37]: W. 8.5 cm. Neg. no. 89424. Similar in shape to the sieve in the southeastern deposit fig. 53, no. 6.  
MMA [32.1.38]: W. 9 cm. Neg. no. 89425; like fig. 53, no. 1.  
MMA [32.1.39]: W. 8.5 cm. Neg. no. 89426; fig. 53, no. 3.  
MMA [32.1.40]: W. 9 cm. Neg. no. 89427; like fig. 53, no. 1.

Made of a coarser clay material than the series from the south-east deposit. Some examples are close to Nile clay, fabric C, with rather large inclusions of chaff. Thrown off the hump and string- (or wire-) cut. Handled carelessly, so that many pieces are deformed.

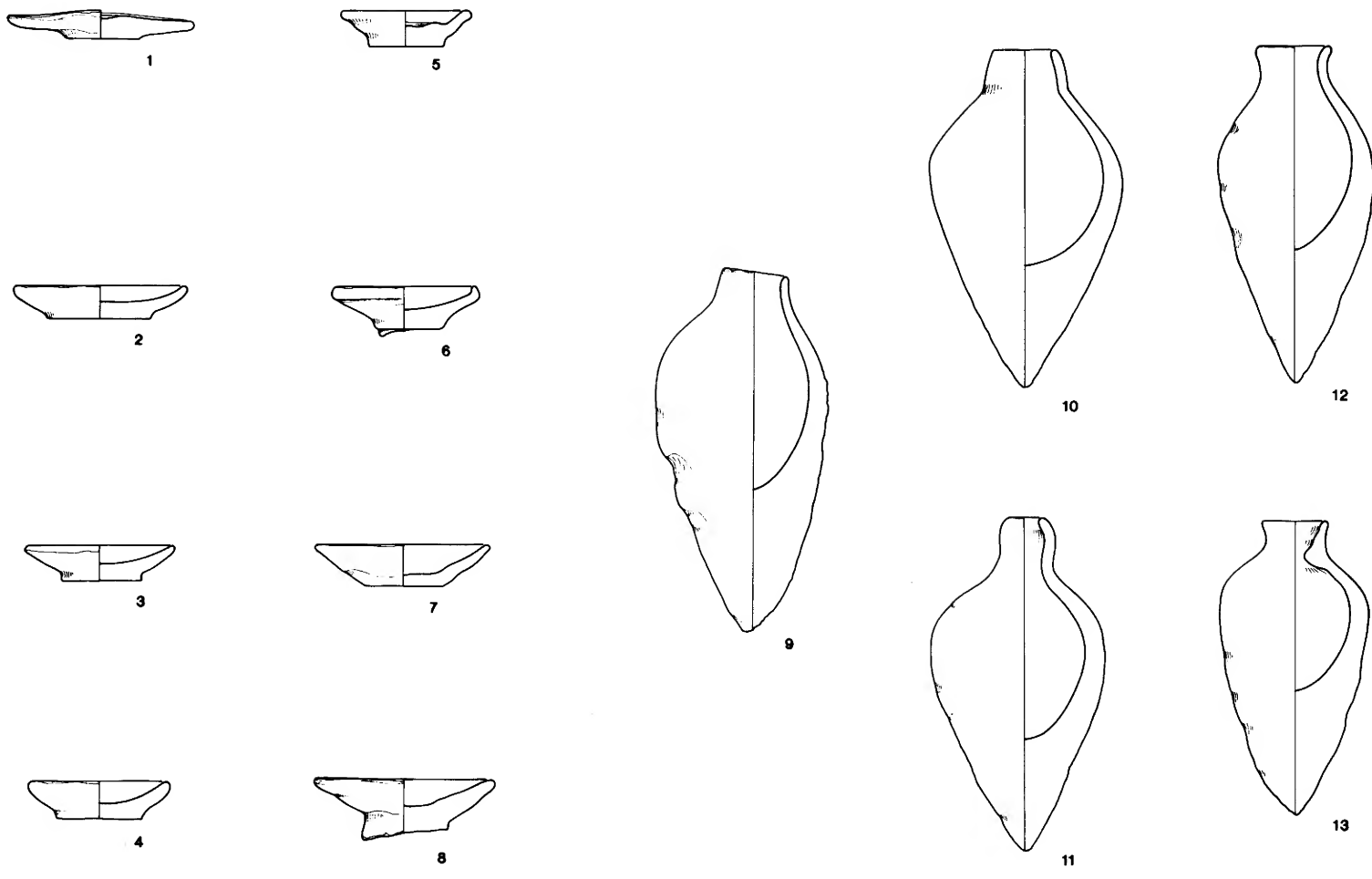


Fig. 53. Pottery found in the southwest foundation deposit of the pyramid. Scale 1:4. See pl. 61d.

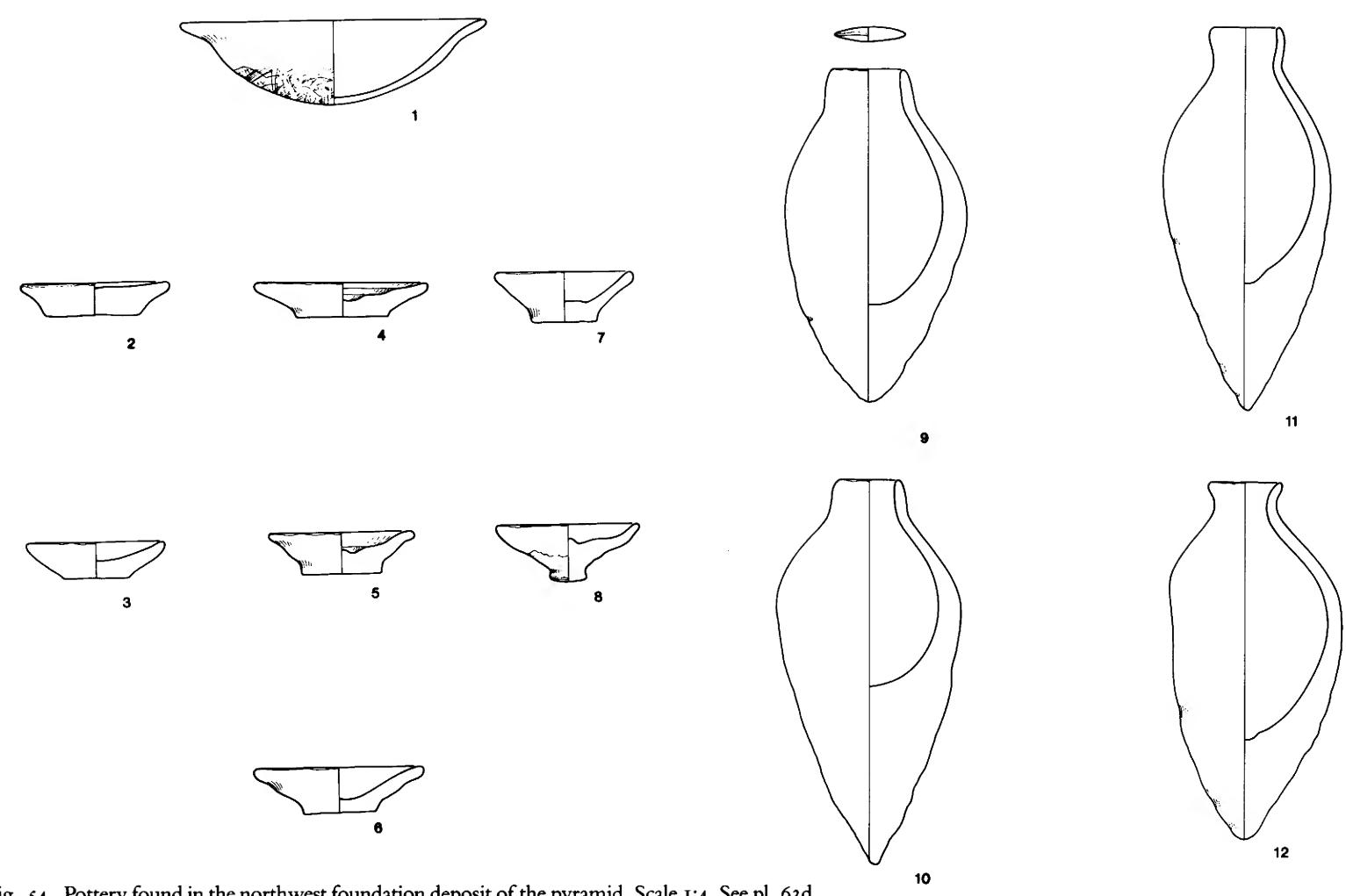


Fig. 54. Pottery found in the northwest foundation deposit of the pyramid. Scale 1:4. See pl. 63d.

*Medium-sized bottles with pointed bottoms:*

MMA [32.1.5]: W. 20 cm. Neg. no. 89428; fig. 53, no. 9.  
MMA [32.1.6]: W. 20 cm. Neg. no. 89429; like fig. 53, no. 13.  
MMA [32.1.7]: W. 17 cm. Neg. no. 89430; fig. 53, no. 12.  
MMA [32.1.8]: W. 16.5 cm. Neg. no. 89431; fig. 53, no. 13.  
MMA [32.1.9]: W. 19 cm. Neg. no. 89432; fig. 53, no. 11.  
MMA [32.1.10]: W. 19 cm. Neg. no. 89433; fig. 53, no. 10.  
MMA [32.1.11–16]: Fieldslip 32Lo16, discarded and numbers withdrawn.

All bottles of Nile clay, fabric B 2, self-slipped on the upper part. Thrown, the lower parts hand made with many bruises on the exterior up to the shoulders. On the interior, rough throwing marks.

Two stoppers are preserved: MMA [32.1.41–42]. Size, according to inventory card: [–.41]: 3.5 cm.; [–.42]: 4 cm.

From the fact that the fragments of some of the bottles (MMA [32.1.11–16]) were scattered all over the deposit hole, and some fragments were even missing, the excavators deduced that the bottles were intentionally broken before they were deposited.

Again, the same main types occur: conical neck; straight neck (in one example—MMA [32.1.9]—set off by a groove); neck narrowing towards the top; and bulging neck.

C. POTS FOUND IN THE NORTHWEST  
FOUNDATION DEPOSIT

Cairo JdE 58904.

Sources: Tomb cards 175–176.

*BMMA* 28, April 1933, II, 10–11, fig. 8.

PHOTOS: L 31–32, 192 (here pl. 63d).

For the archaeological context of the whole group, see page 89, fig. 35, and pl. 62c. Drawings after the tomb cards; here, fig. 54. Descriptions follow the indications on the tomb cards.

*Medium-sized, round-bottomed plate:*

On the plan, page 89, fig. 35, no. 1.; fig. 54, no. 1. Nile clay, fabric B 1; interior self-slipped; bottom exterior hand-finished. W. 19 cm.

*Small, footed plates:*

Twenty-six examples. On the plan, page 89, fig. 35, nos. 2, 3 (fig. 54, no. 2), 4 (fig. 54, no. 8); 5, 6, 7, 11, 14, 15, 17, 18, 19, 20 (fig. 54, nos. 7), 21, 22, 23, 24, 27, 28, 30 (fig. 54, no. 6), 32, 33, 36 (fig. 54, no. 3), 37, 38, 39 (fig. 54, no. 4, 5). W. 8.5–10.5 cm.

Nile clay, fabric B 2. Thrown; string- (or wire-) cut bases. Distortions from careless handling.

*Medium-sized bottles with pointed bottoms:*

Twelve examples. On the plan, page 88, fig. 35, nos. 8, 9 (both, fig. 54, nos. 9–10), 10, 12, 13, 16, 25, 26 (fig. 54, no. 11), 29, 31, 34 (fig. 54, no. 12), 35.

Nile clay, fabric B 2. Thrown; lower parts handmade.

Seven bottles were found intact; one had the neck broken off; the others were in fragments. Each bottle seems to have had its own stopper, applied when still wet; all stoppers, however, had fallen off (fig. 54, no. 9).

The shapes again include the conical neck, the bulging neck and the neck narrowing at the top. The straight neck is not represented here.

A “dark brown leaf-like crust was found on the interiors of many of the jars” (tomb card 175). This description suggests that the contents were muddy water or beer.

D. POTS FOUND IN THE “ENTRANCE CUT” DEPOSIT

MMA [33.1.166] and Cairo JdE 60248.

Sources: Tomb cards 641–647. The drawings (here fig. 55a–b) and descriptions are taken from these tomb cards.

Position of deposit hole shown in *BMMA* 28, Nov. 1933, II, 5, fig. 2.

PHOTOS: L 32–33, 52, 53 (showing pots in position), L 32–33, 234–236 (here pl. 65a–d).

For the archaeological context see page 92, fig. 39, pl. 64d.

The position and size of this deposit have rightly been given as reasons for connecting it with the “entrance cut” rather than with pyramid 7, under the enclosure wall of which it was partly situated (page 92). A hole for a foundation deposit for pyramid 7, would be positioned either under the corner of the pyramid itself or directly below the enclosure wall. In addition, it is clear that the contents of this deposit in no way match the usual foundation deposits of the smaller pyramids. For purposes of chronology, it is irrelevant whether the group belongs to the “entrance cut” or pyramid 7: since the enclosure wall of pyramid 7 runs over the mouth of the hole, the deposit is in either case earlier than, or contemporary with that wall. In the second volume of this publication, a date within the reign of Senwosret I will be established for pyramid 7, which clearly belongs to the original plan of the outer court complex.

The distribution of the objects and pots in the circular hole can be seen in figure 39 and on plate 64d. The pots were arranged mainly along the walls: five large jars were lined up on one side; four stood against the other. To either side of this latter group was a heap of fragmented plates, bowls, and cups. Two plates were found towards the center of the hole. The center was otherwise occupied by large bricks. All the jars were affected by dampness, and it is therefore possible that any organic material that may have been placed in the center of the deposit had completely vanished.

The final determination of the function of this deposit should await a detailed study of all deposits in the precinct. The following points, however, are noteworthy:

- A. The deposit is clearly not a “normal” foundation deposit, as is shown by the overwhelmingly utilitarian nature of the pottery and contents.
- B. The contents of the storage jars as found have the general character of debris from building activities (see Table 1). The charcoal and natron/gaylussite would best fit the preparation of “Egyptian blue” pigment for painting. This pigment was much in demand for the many square meters of blue ceiling that had to be painted in the temple, causeway and other buildings.<sup>293</sup>
- C. The items found in the jars (see Table 1) were not necessarily those these jars contained when they were originally brought up to the site, as is shown by the fact that the covers had been broken off before the jars were lowered into the deposit hole.

In view of these points, it seems probable that the “entrance cut” deposit served simply as a repository for pottery and material no longer needed when the building activities in the area had come to an end.

<sup>293</sup> Alfred Lucas, *Ancient Egyptian Materials and Industries* 4, rev. J.R. Harris (London, 1962) 341.

TABLE 1: CONTENTS OF JARS FROM “ENTRANCE CUT” DEPOSIT

Jar no.	Sample no.	Description of content according to tomb card 644	Comment of analyst	Method used
2	—	A few fragments of coarse brown-ware dishes with red slip [the large round-bottomed plates].	—	—
3	—	Few small potsherds; a little charcoal; a little ash; bit of mud from sealing.	—	—
4	—	Fragments of a deep bowl with red slip [one of the cups?] and some soft brown-ware dishes [large plates?].	—	—
5	8	Fragments of brown-ware dishes [large plates]. Great quantity of powdered charcoal and ashes. Many small lumps of charcoal.	Brown sand and charcoal-like pieces.	visual examination <sup>294</sup>
6	—	Quantity of gray ash-like powder. At the bottom, a small quantity powdered natron (?).	—	—
7	—	Quantity of the same gray ashy powder. Bit of mud from the sealing.	—	—
8(A)	4	Quantity of the same gray ashy powder. Bird bone. Dark mud-like powder. Powdered natron (? small quantity). Fragments of large coarse brown-ware dishes. One worked flint-flake (of common XII Dynasty type). [The latter here fig. 57.]	Vegetal coal sample, two quartz-like minerals, charcoal, transparent white fibres, yellow amber plant material, fine-grained to chunky gray-brown material and fine-grained sandy brown material. Gaylussite and natron <sup>295</sup>	visual examination X-ray Diffraction
8(B)	5		Fine sand, some pieces of limestone.	visual examination

Large, round-bottomed plates:

Two examples from the seven found are given here: fig. 55a, nos. 1 and 2 from the tomb cards. The excavators convincingly suggested that the large plates may once have covered the mouths of the large marl clay, fabric C jars (see below). Before the pots were lowered into the hole, the covers over the jars must have been removed, their contents presumably having been used up (for further remarks on the contents see Table 1). Finally, the covers were either stacked inside the large jars, or deposited in a heap at point X (fig. 39 page 92).

The plates are of Nile clay, fabric C, their interiors coated with red ochre wash. Thrown; exterior of bottoms hand-finished. W. 33–45 cm.

Large lumps of the mud used to seal the jars were found still adhering to some plates.

Medium-sized and small round-bottomed plates:

One example each of a medium-sized and a small plate from the seven found is given here: fig. 55a, nos. 3, 4.

All plates seem to be of Nile clay, fabric B 2, plain with self slip. Thrown; exterior of bottoms hand-finished.

These plates were found in another heap in a corner; two pieces lay further towards the center (fig. 39 at a, b, c). Three examples are said to have been charred by fire.

For the possibility that fig. 55a, no. 3 was in fact of different size, see below under “small footed plates.”

Small, footed plates:

Three examples from the four found are shown in fig. 55a, nos. 5, 6, 7. Most probably Nile clay, fabric B 2, plain. String- (or wire-) cut bases. Tomb card 647 describes these plates as broken and fragmentary. Their relatively small number in comparison with the quantities usually found in foundation deposits should be noted (cf. above, nos. 1–3).

It is possible that a mistake occurred in the scale of the drawings. Tomb card 647 expressly gives the scale of its drawings as 1:5; in this case, the plates depicted in fig. 55a would have

diameters of 13.2 cm. (no. 5), 14.4 cm. (no. 6), and 14 cm. (no. 7). These are unusual sizes for model plates, the type to which the pieces clearly belong on the basis of their shape. We suggest therefore that the scale of the drawings on tomb card 647 was actually 1:4. In that case the diameters of the three plates would be 10.4 cm., 11.6 cm. and 11.4 cm. respectively—reasonable sizes for model plates. Whether the medium sized plate fig. 55a, no. 3, which also appears on tomb card 647, was also smaller (5.2 cm. instead of 19.2 cm. as drawn) must remain an open question.

Large, round-bottomed cup:

Two examples were found: fig. 55a, nos. 8, 9. No. 8 is Nile clay, fabric C. The interior is red-coated with an ochre wash that also covers the uppermost 5.5 cm. of the exterior. The rest of the surface is plain. Remarkable is an exterior zone, ca. 4 cm. high and starting just 1 cm. below the rim, in which very closely spaced grooves ca. 3 mm. wide have been incised with a sharp-edged tool. Considering the plainness of the vessel, it is probable that the grooved zone has some utilitarian function. Cups of this size and shape are often represented as cooking pots.

<sup>294</sup> The visual examination of samples 4 and 8 was made by Ian Stupakoff in 1984 when he was scientific assistant in the Department for Object Observation of the Metropolitan Museum of Art. The comment on sample 5 is by the present author.

<sup>295</sup> Sample 8A was analyzed by Deborah Schorsch, Department of Object Conservation of the Metropolitan Museum of Art. George Wheeler of the same Department added the following comments: “The major components of this sample are natron and gaylussite. Two other components (*spurrite* and *natrofairchildite*) are indicated but they are identified with much lower confidence factors. It is not possible to determine the exact nature of the original sample taken from the archaeological environment. *Gaylussite* could have been present originally and then transformed to *natron* and *calcite*. It is not likely that *gaylussite* would have been formed from *natron* and *calcite*. If *gaylussite* were present originally it is possible that what the Egyptians thought was *natron* was actually *gaylussite*.”

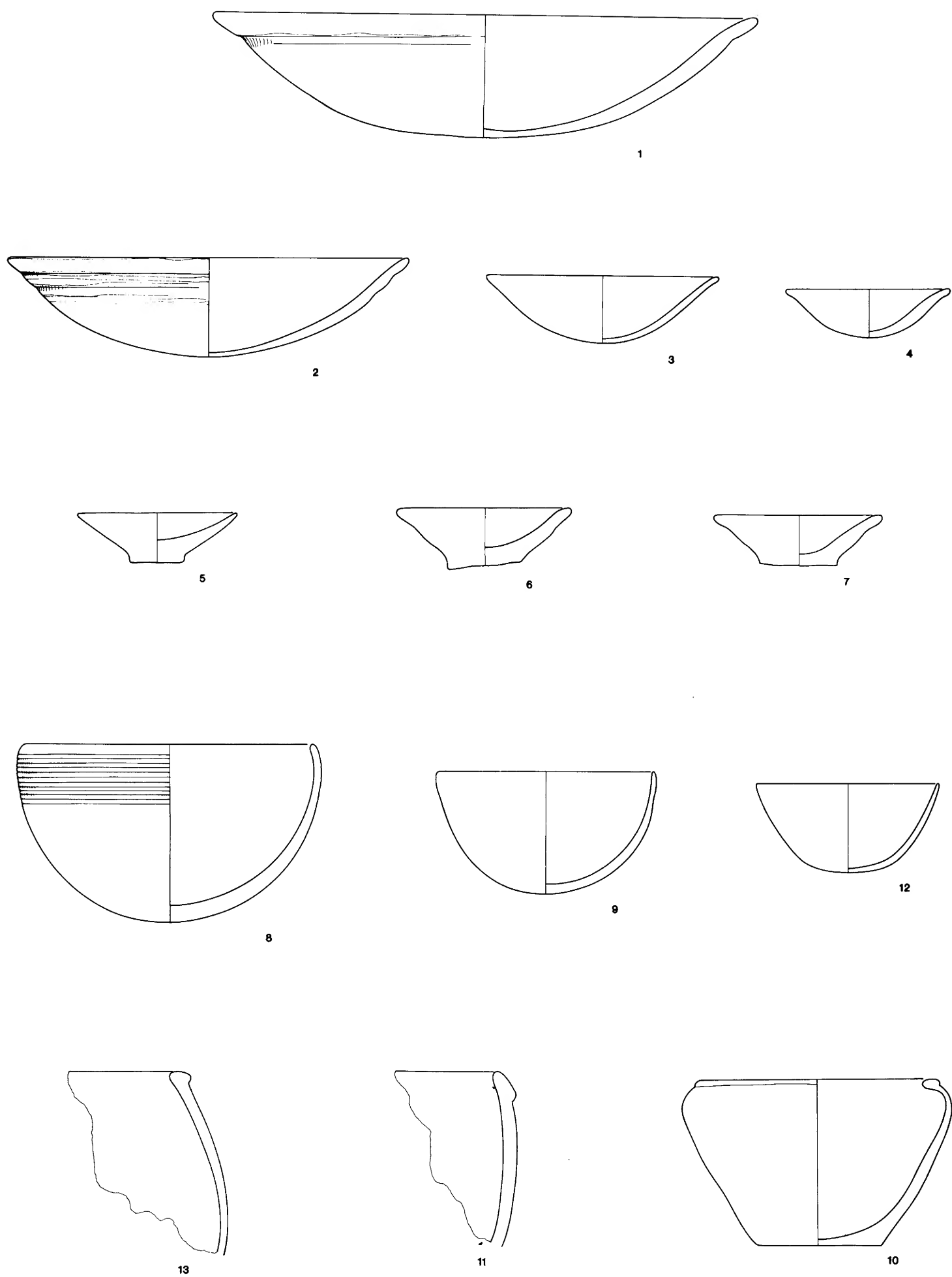


Fig. 55a. Pottery found in the "entrance cut" deposit, open shapes. Scale 1:4.

Number 9 has thinner walls and is of Nile clay, fabric B 2. A red ochre wash covered both interior and exterior. This vessel too was found in fragmentary condition.

*Unusually large, round- or flat-bottomed cup:*

Only one fragment was found (fig. 55a, no. 11). It seems to have been of Nile clay, fabric C, with a thin red ochre wash inside and out. Large, round-bottomed vessels of this type were found full of joints of meat in the "Grand Mastaba du Nord"; they will be published in connection with that mastaba.

*Large, flat-bottomed cup:*

One example was found complete (fig. 55a, no. 10). This too was apparently of Nile clay, fabric C, and coated with a thin red ochre wash inside and out. The presence of a shoulder is remarkable.

*Medium-sized hemispherical cup:*

The single example found is shown as no. 12, fig. 55a. It is of Nile clay, fabric B 1, rather hard-fired with red ochre wash inside and out. The vessel index is 203 (see page 140).

All the large and medium-sized cups are said to have been found "in the *zirs* and at point X" (fig. 39).

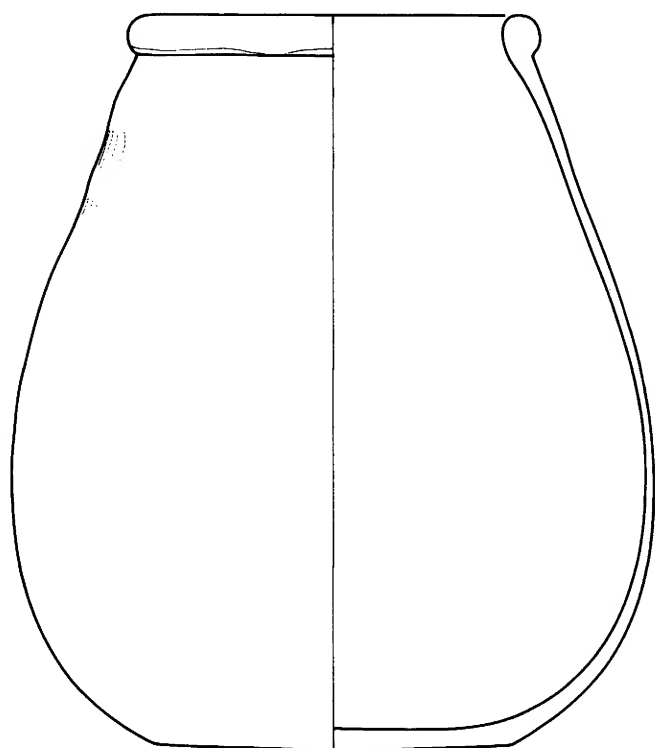


Fig. 55b. Large jar found in the "entrance cut" deposit (MMA [33.1.166]). Scale 1:6.

*Large, open-mouthed, flat-bottomed jars ("zirs"):*

The position of the nine jars in the deposit is shown in fig. 39. The jar shown in fig. 55b is MMA [33.1.166] (Neg. no. 93701). Another jar (no. 9) is now in Cairo, Jd'E 60248.

The jars are of marl clay, fabric C. The numbering and dimensions of the following pieces are taken from tomb card 641; the vessel indices have been furnished by the author.

- Jar no. 3: H. 55 cm. Rim W. 27 cm. Base W. 26 cm. Maximum W. 47 cm. Vessel index 85.
- Jar no. 4: H. 52 cm. Rim W. 29 cm. Base W. 23 cm. Maximum W. 43 cm. Vessel index 83.
- Jar no. 7: H. 50 cm. Rim W. 27 cm. Base W. 27 cm. Maximum W. 40 cm. Vessel index 80.

Jar no. 9: H. 55 cm. Rim W. 31.5 cm. Base W. 25 cm. Maximum W. 48 cm. Vessel index 87.

Lumps of mud were found adhering to the rims and shoulders of all the jars. Jar no. 1 had a crude graffito scribbled in charcoal (fig. 56).

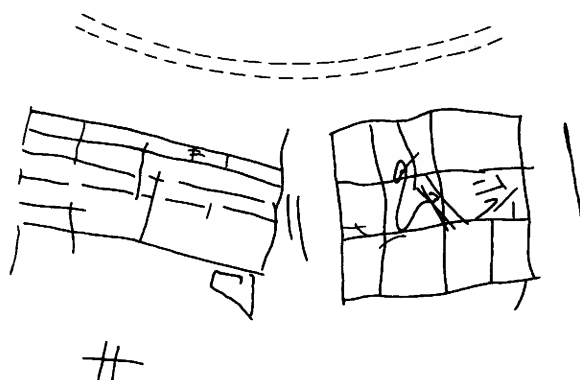


Fig. 56. Charcoal graffito on shoulder of large jar. See fig. 55b.

According to tomb card 644 the jars contained fragments of the pottery described above and some other objects and materials; a description is given in Table 1.



Fig. 57. Flint implement found inside a large jar like that shown in fig. 55b. Scale 1:2.

*Medium-sized, open-mouthed jar:*

Only a fragment of this jar (fig. 55a, no. 13) was preserved. The description on the tomb card seems to indicate that the fabric was marl clay, fabric C: "Hard coarse pale red ware (*tafl* clay, like hard fired *gulleh*), thin white wash on exterior. Interior surface brown." But the material could also be the Upper Egyptian marl clay, fabric A 2, of which a comparable piece of marl clay, fabric A 3 was found in the Lisht North cemetery (MMA 15.3.1367).

According to the tomb cards, the fragment was found together with the cups.

E. POTS FOUND IN THE WESTERNMOST DEPOSIT  
ALONG THE SOUTH ENCLOSURE WALL  
("SOUTHWALL DEPOSIT 1")

MMA 32.1.101-102, Cairo JdE 58905, 58906

Sources: Tomb cards 427-439 (written by Hayes).

Letters of Lansing to Winlock, February 3 and 8, March 8, and April 11, 1932.

Lisht Journal I, 187-190.



BMMA 28, April 1933, II, 14–16, fig. 12.

BIBLIOGRAPHY: Kemp and Merrillees, *Minoan Pottery*, 23.

PHOTOS: L 31–32, 17–21 (here pl. 66).

For the archaeological context, see page 92, figs. 40, 41.

Drawings fig. 59a–b from the tomb cards. The pots are now in the Oriental Institute, University of Chicago.

To establish the chronology and function of this deposit, a discussion in some detail of the circumstances of the find is necessary. We confine ourselves for the present purpose to a discussion of the chronologically relevant features. The functional questions can only be studied in connection with a treatment of all the deposits in the precinct, which will follow in a second volume of this publication. Information comes mainly from the photographs, the field journal, and the letter from Lansing to Winlock of February 8, 1932. Among the photographs, L 32–33, 17 (pl. 66a) shows the situation when the pit was discovered. The following features should be noted:

- A. The roughly square deposit hole, ca. 4 c. or 2 m. on each side, lies 3.40–3.55 m. south of the southern face of the southern stone enclosure wall (“hawk-panel wall”). The hole was cut into the red conglomerate with occasional pebbles which forms the *gebel* in this area. The deposit cannot be said to be “in a row” with the other deposits found in the southern outer court (pl. 75; see the second volume of this publication). Nine such holes were found, but they are neither really “in a row” nor uniform in shape or depth. Some are clearly situated below the enclosure walls of secondary pyramids; this is especially true in the case of hole no. 4, in which the sledge was found.<sup>296</sup> This object was buried in a manner quite different than the jars under discussion here; it was covered by a layer of bricks. It thus appears that each hole and deposit must be explained and dated independently.
- B. Lansing noted specifically in his letter that, when uncovered, the “mud and chip pavement” over the mouth of the hole was intact. This “pavement” is a layer found in the whole area of the outer court; its purpose seems to have been to create a continuous level surface which was flush with the top of the foundations of the enclosure wall.

In pl. 66a, the “mud and chip pavement” can be seen in the right center of the picture. In the left of the picture, its upper surface is flush with the foundations of the stone enclosure. At the moment the photograph was taken, the “pavement” had already been removed for a considerable distance along the wall; consequently, the foundation trench of the enclosure wall is exposed. The stratigraphic section in the background shows that this foundation trench was originally filled with dark mud, over which a layer of pure white chips was spread. On this layer of chip is erected one of the small “level walls.” Such walls were built in order to show the workmen who covered the area with the “pavement” how high they were to bring the fill.

The stratigraphy just described makes it clear that the south wall deposit 1 must have been dug—and filled—before the southern outer court received its final “pavement.” It is furthermore unthinkable that this “pavement” would have been spread before the stone enclosure wall was completed, even to the reliefs of the panels. This view is corroborated by the fact that the leveling wall in pl. 66a abuts the foundations of the stone enclosure. The enclosure wall thus establishes a date “*ante quem*” for south wall deposit 1: the deposit must have been laid down before the stone enclosure of the royal pyramid was finished, or—at the latest—during

the last stages of its completion. As has been stated in another place in this book (page 17) and will be shown in greater detail in the second volume, both the stone enclosure and the secondary pyramids in the outer court were finished by the years 20–25 of the king’s reign. The date of the south wall deposit 1 is therefore fixed with certainty to a time around the middle of the reign of Senwosret I.

- C. The fill of the hole below the “pavement of mud and chip” is described by Lansing as consisting of red sand, pebbles, small chip of limestone, and an occasional larger, rough piece of limestone that struck the excavator as being debris from stone-dressing. Some sherds of “red ware” and some broken brick were mixed in.

This material seems to derive from two sources: the earth dug out when the hole was made, and building debris. Again, deposition at a time when the final building activities had come to an end in the area is indicated.

- D. At a depth ca. 1 m. below the *gebel* surface, the deposited pots began to come to light. A series of photographs (pl. 66a–d) shows clearly the condition of the pots when found. All were completely smashed to pieces; the wood was fairly, the ropes almost completely decayed. None of the photographs shows a top of a jar preserved with its sealing of Nile clay intact.

This evidence suggests that the reconstruction of the sealed jar hung in a sling from a carrying pole, which was drawn by Hayes on tomb card 431 (fig. 58), as well as the drawings of the pots in the hole (fig. 40, 41), is to a large extent conjectural. The description in the preliminary report—“no less than 22, their mouths sealed with mud”—is another instance of a hasty interpretation of the data.

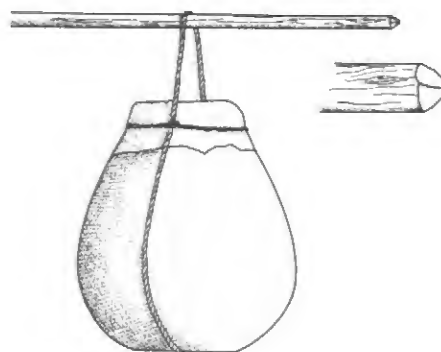


Fig. 58. Reconstruction of large jar from southwall deposit 1, sealed and hung from carrying pole.

- E. The “sealing” of the jars, as found, consisted of fragments of Nile mud stoppers which “were found lying in the broken mouths of the zirs.” In addition it was observed that “all of the shoulders of the zirs carried stains and lumps of mud.” Relying solely on this description, which is corroborated by the photographs (pl. 66), one can deduce that the jars had indeed at one time been sealed. Since no remains of pottery plates were found, however, it is hardly probable that the jars were still sealed when they were lowered into the hole. Mouths 25 cm. and more in width cannot easily be closed with unbaked Nile mud alone; some kind of solid cover is needed underneath the mud, as in the case of the jars in the entrance cut deposit (see above), and in an example from

<sup>296</sup> A. Lansing, BMMA 15, July 1920, II, 10–11, with fig. 7.

the “OK cemetery” of Lisht,<sup>297</sup> actually dated to the late Twelfth to Thirteenth Dynasty.

We must accordingly assume that the covers of the jars in south wall deposit 1 were removed before their deposition in the hole. It should also be asked whether the rope sling shown in fig. 58 was not too insecure a contrivance for carrying such large and heavy containers. If the rope really looked as it does in the reconstruction, the arrangement could only have been adequate for lowering the jars into the hole, not for carrying them up to the pyramid plateau.

The fact that there are exactly 22 carrying poles, one for each jar, suggests that the jars were all carried some distance together, not one by one. The absence of carrying nets and the usual hard covers suggests, however, that the contents of the jars were used up between their transportation to the pit and their deposition in it.

The presence of a square, basin-like area on the floor of the deposit pit (page 92; pl. 66d) seems to indicate that the hole was originally meant to contain a square object, and was used only secondarily for the jars.

- F. Finally, the contents of the jars: No solid contents in any appreciable amount were found. The excavators therefore thought that the pots had been filled with a liquid which had evaporated. Hayes observed a “fine brown crust” on all interior surfaces. One sample brought to the Metropolitan Museum of Art consists, according to I. Stupakoff, of “fine-grained to ½- to 1-inch medium-brown material” (sample 3 *zir* 4); this could well be a piece of the “crust.” The material suggests the well known, fine clay crusts which have been repeatedly observed in beer jars.<sup>298</sup> Such crusts correspond well to literary and pictorial sources which record jars being smeared on the inside with fine clay before beer is poured into them. It is therefore probable that the jars under discussion here also once contained beer. The question remains whether this was the filling that was used up before the jars were lowered into the hole, or whether the jars had been used for beer only at some previous time, so that the crust still covered the inner surfaces when the final contents were introduced.<sup>299</sup>

Before the question of the contents of the jars can be finally decided, the amount of the commodity in question should be established. The capacity of the four jars as reconstructed can be determined:

Jar no. 1 (fig. 59, no. 1): ca. 69.3 liters (⅓ of 100 hekat = 60 liters)

Jar no. 2 (fig. 59, no. 3): ca. 54.36 liters (⅓ of 100 hekat = 53.3 liters)

Jar no. 5 (fig. 59, no. 2): ca. 25.5 liters (= 5¼ hekat)

Jar no. 6 (fig. 59, no. 4): ca. 50.96 liters (= 10⅙ hekat)

On the average, then, each jar had a capacity of 50 liters. There were 22 jars, and thus roughly 1100 liters of a solid or liquid commodity. The presence of such amounts in itself rules out the “milk(?)” suggested by Hayes, because in ancient Egypt such quantities of milk could never have been available at one time.<sup>300</sup>

Points A–F indicate that south wall deposit 1 cannot be identified with the deposits of embalming material known from Thebes.<sup>301</sup> These deposits contain jars which are completely filled with natron in bags and other materials used at the mummification, and the covers are always intact. Southwall deposit 1, in contrast, consists of jars which had been opened before deposition. No traces of natron have been found in the jars, so that even the original contents

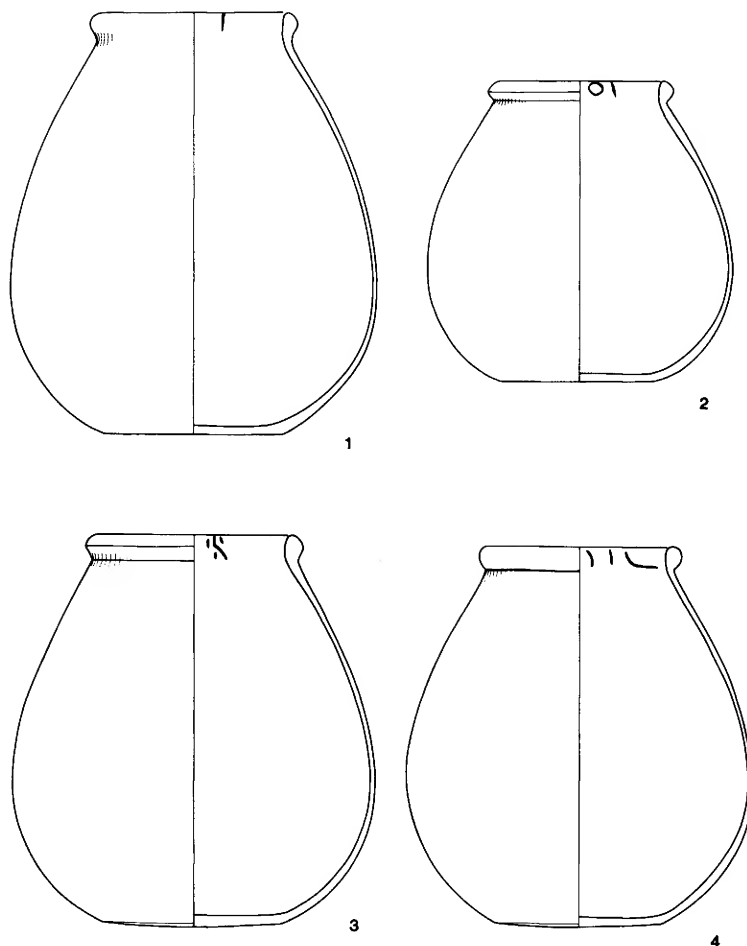


Fig. 59. Four large jars from southwall deposit 1: JdE 58905–58906 (top), MMA [32.1.102], [32.1.101] (below). Scale 1:10.

<sup>297</sup> Tomb card 1857 in the Lisht South series. Although topographically closer to the Lisht North cemetery, this group of tombs will be published with the Lisht South cemetery. The tomb card shows a large, marl C wide-mouthed jar inside which at a level of about the uppermost 1/5 of the vessel, a large plate is shown resting upside-down. The space above the plate is filled with mud that bulges slightly above the mouth of the jar. Further mud is smeared in a thin layer over the outside down to the level at which the plate rests on the inside. At Dahshur, we had the opportunity to observe that the mud used for such covers is richly mixed with chaff and finally whitewashed all over. The embalming jars of king Tutankhamun are indeed closed only with mud (Winlock, *Materials* 6), but in this case the vessels were tightly filled with solid natron bags solid enough for the thin mud covers to rest on. How much rope netting a large jar needs to be carried can be seen, for instance, in the tomb of Rekhmira: Norman de Garis Davis, *The Tomb of Rekh-mi-Ra at Thebes* (Publications of the Metropolitan Museum of Art Egyptian Expedition 11; New York, 1943) I, pl. 50.

<sup>298</sup> Wolfgang Helck, *Das Bier bei den alten Ägyptern* (Berlin, 1971) and LÄ I, 790 s.v. “Bier”. It is assumed that the crust helped the beer to settle. Deborah Schorsch of the Metropolitan Museum of Art Department of Objects Conservation however has examined sample 3 further. She was able to identify visually or by wet chemical analysis the following materials: quartz sand, rose gypsum, limestone, other carbonates, charcoal, other organic materials and a piece of chert. This mixture indicates to her that the sample consists of an accumulation of debris. No *natron* was present.

<sup>299</sup> Winlock supposed a similar situation in the tomb of queen Meritamun: Herbert E. Winlock, *The Tomb of Queen Meryet-Amun at Thebes* (Publications of the Metropolitan Museum of Art Egyptian Expedition 6. New York, 1932) 43–44.

<sup>300</sup> Milk was measured in *hin*, i.e., approximately one-half liter (0.48 l) and kept in small vessels. The milk production of ancient Egyptian cows is not thought to have been great: Joachim Boessneck, *Die Haustiere in Altägypten* (Veröffentlichungen der Zoologischen Staatssammlung München, Munich, 1953) 12. W. Helck, LÄ IV, 126 s.v. “Milch(wirtschaft)” For the hekat see W. Helck, LÄ III, 1201 s.v. “Masse und Gewichte.”

<sup>301</sup> H. E. Winlock, *BMMA* 17, Dec. 1922, II, 34; Dec. 1928, 25–26; *Materials* 7–13.



Fig. 60. Incised pot marks from large jars found in deposit 1. Scale 1:3.

need not be connected with mummification. In character the deposit is similar to the “entrance cut” deposit. Any connection with the funeral of Senwosret I is ruled out by the date.

*Large, open-mouthed, flat-bottomed jars:*

There were 22, all in fragments; four were reconstructed (fig. 59). All jars are of marl clay, fabric C (no. 6 seems to be of marl clay, fabric C 1). They are handmade, most probably coiled, with the bottoms made in slab technique. Dimensions can be given only for the four reconstructed jars:

Jar no. 1: Jd'E 58905. H. 56 cm. W. at mouth 25 cm. W. of base 24 cm. Maximum W. 49 cm. Vessel index 87.

Jar no. 2: MMA [32.1.102]. H. 51.5 cm. (very near 2 c.) W. at mouth 26.5 cm. W. of base 24 cm. Maximum W. 48 cm. Vessel index 93.

Jar no. 5: Jd'E 58906. H. 40 cm. W. at mouth 21 cm. W. at base 20 cm. Maximum W. 41 cm. Vessel index 102.

Jar no. 6: MMA [32.1.101]. H. 50 cm. W. at mouth 26 cm. W. at base 24.5 cm. Maximum W. 6 cm. Vessel index 92.

All jars bore a mark on the inside of the rim (fig. 60) which was incised before firing. Such marks are known from similar jars from other sites and seem to indicate the capacity of the vessels.<sup>302</sup>

*Large, round-bottomed bottle:*

The neck of one example was found “overlying the upper layer of zirs.” The piece may thus have entered with the fill material and need not belong to the deposit itself.

Nile C; thick red ochre wash on the exterior (see page 140 and fig. 61).

*Medium-sized “offering stands” or “burners”:*

Two examples were found, both fragmentary, in the layer on top of the jars; they too might therefore be fill material. No signs of use, such as blackening, were noted.

Nile C; faint traces of red ochre coating on the exterior.

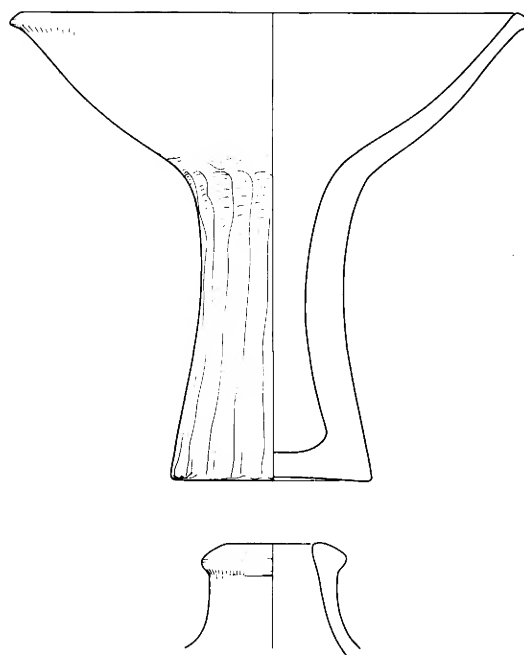


Fig. 61. Offering stand and neck of large bottle from deposit 1. Scale 1:4.

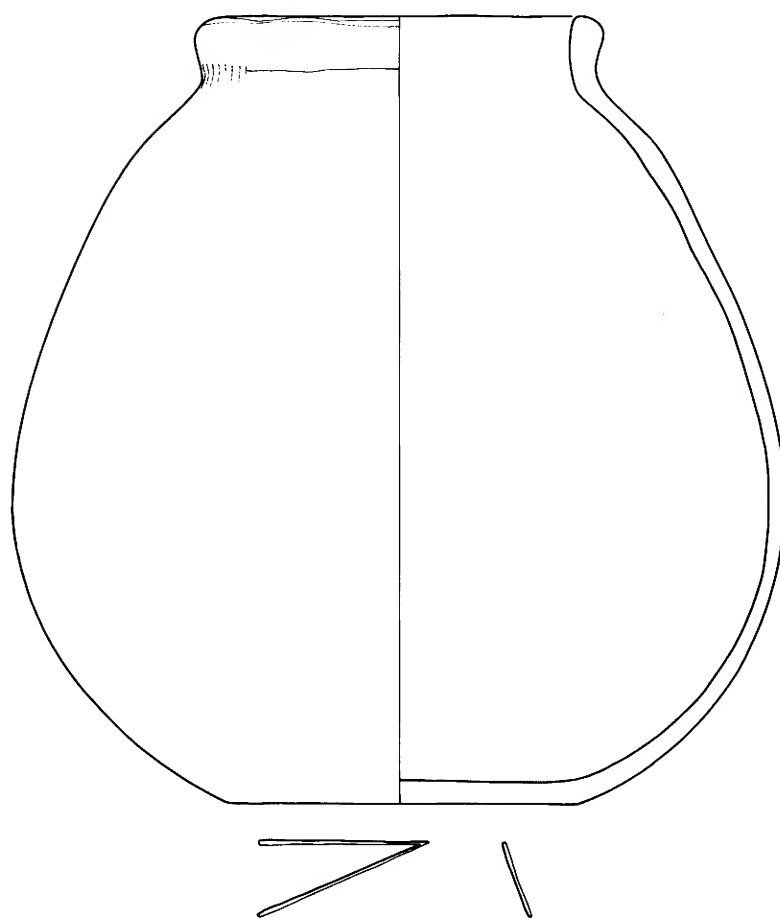


Fig. 62. Large jar from deposit 2. Scale 1:5.

F. POT FOUND IN THE SECOND DEPOSIT FROM THE WEST  
ALONG THE SOUTH STONE ENCLOSURE  
OF THE MAIN PYRAMID (“SOUTH WALL DEPOSIT 2”)

Sources: Tomb card 440.

PHOTO: L 32–33, 6.

Drawing: after the tomb card; fig. 62.

No records are available concerning the archaeological context of this deposit.

<sup>302</sup> For similar marks, see Engebach, *Harageh* pl. 11; Petrie, *Illahun* pl. 15.

*Large, wide-mouthed, flat-bottomed jar:*  
According to the tomb card, this jar is of marl C. It is presumably handmade (coiled, the bottom made as a slab), like other jars of the same type.  
Inside the neck a mark was incised before firing (fig. 62). Dimensions as measured on the drawing: H. 53 cm. W. at mouth 24 cm. Maximum W. 52 cm. Vessel index 98.  
The jar takes its place beside those from south wall deposit I solely for the reason that it is of the same type.

G. POTTERY FOUND IN THE BASIN OF  
THE BRICK CHAMBER

Newly found during the 1984/85 season.  
Tables 2, 3.  
Drawings: figs. 63–73; pl. 72.  
This group is divided into two sub-groups:  
a. the sherds from the lower strata, and  
b. the sherds and pots from the upper strata.  
The hard gypsum floor (page 52, fig. 17, no. 5) divides the two groups: the pottery of the lower strata (a) was found below

this floor; that of the upper strata (b) lay above it. The pottery of group b was in fact mainly found in stratum 2 (fig. 17).  
The division has interesting implications for the connection of the two pottery groups to one of the various phases of the “basin.” As shown on page 52, the fill below the gypsum floor was deposited at the time the basin and room were first in use, after the chamber had been lined with brick walls and a brick floor. It is probable that a stone plinth was originally let into the basin to support some object connected with the temple rites. The layers above the gypsum floor filled the basin after the plinth was removed. The chronology of the two groups of pottery therefore has decisive consequences for dating the events in the brick chamber.  
The original function of the pottery deposited in the basin of the brick chamber may be suggested by the presence of a fair number of model vessels (figs. 63, 64, 71). These models, as well as the other pots, may originally have been used in the ritual activities of the funeral temple. This suggestion is especially likely in the case of the pottery from the upper strata.

TABLE 2: POTTERY FOUND IN STRATUM 2 IN THE BRICK CHAMBER BASIN

A. Nile clay fabrics (nos. 84/– are depicted in figs. 63–74)<sup>303</sup>

Shape	Fabric	Ware	Complete vessels	Rims	Body sherds	Bases	Minimum number of vessels
large, round-bottomed plates	Nile B 2, near C	plain	—	84/38	—	—	1
large, round-bottomed plates	Nile C, near B 2	red-coated <sup>304</sup>	—	84/37	7	—	1
medium sized, round-bottomed plates	Nile B 1, fine	plain	—	—	7	—	1
medium-sized, round bottomed plates	Nile B 2	red-coated	—	—	5	—	1
medium-sized plates	Nile B 2, sandy	red-coated inside	—	—	1	—	1
small, round-bottomed plates profile rims	Nile B 2, sandy	plain	84/11;32	plus body: 84/31	28	3	6
small, flat-based plates	Nile B 1, fine	plain	—	—	—	7 plus 84/33a	8
small, flat-based plates	Nile B 1, fine	red-coated	84/15	—	21	3	5
small, flat-based plates	Nile B 2, sandy	plain	84/33	—	—	—	1
miniature flat-based plates	Nile C, near B 2	plain	84/18;19	—	106	13 plus 25 (1/4)	22
large bowls, round-bottomed	Nile B 2	plain	—	84/39	—	—	1

<sup>303</sup> In the sherd counts of tables 2–7, each 84/– number stands for one item. The minimum number of vessels in each group is determined in the following manner: To the number of complete vessels is first added the number of bases. If no bases were found, the number of rims of different shape is added. If both bases and rims are found, the group with the higher number is used. The body sherds are then divided by 5 (for small vessels), 14 (for vessels of medium size) or 58 (for large vessels). These divisors were obtained by counting the number of sherds that belonged to completely reconstructed vessels of each category; the numbers given represent the average of several such counts. After division, the resulting number of vessels attested by body sherds is checked against the number obtained by counting the rims and bases. If rims and bases yield a number higher than that resulting from the count of body sherds, the latter are disregarded. If the minimum number of vessels represented by body sherds is higher than the one resulting from rims and bases, however, the difference is added. For example: 4 rims, 3 bases of a

medium-sized vessels type and 86 body sherds were found. 86: 14 = 6.1. In this case 6 would be the minimum number, according to the body sherds. Four was the highest number, according to rims and bases. Accordingly, 6 is the final number entered into the chart.  
<sup>304</sup> A note on “red-coated”: If no qualifier is added, it means that an open vessel, is entirely red-coated, both inside and out. In a closed vessel, it means that the outside is red-coated, usually with a small area of the interior bordering the rim.  
<sup>305</sup> To both hemispherical and flat-based cups, 9 pieces must be added. These constitute half the 17 minimum pieces derived from dividing 160 body sherds (see at end of A. in Table 2). These body sherds could not be conclusively assigned to either hemispherical or flat-based cups of the same ware, and to attribute half the resulting vessels to each group is the best that could be done. For further uncertainties in the count of body sherds of this ware, see the following note.

<i>Shape</i>	<i>Fabric</i>	<i>Ware</i>	<i>Complete vessels</i>	<i>Rims</i>	<i>Body sherds</i>	<i>Bases</i>	<i>Minimum number of vessels</i> <sup>303</sup>
medium-sized, round-bottomed bowls	Nile B 1, many organic particles	plain	84/35	84/34	60 plus 1 hard-fired	4 (parts)	6
medium-sized, round-bottomed bowls	Nile B 1, many organic particles	red-coated	—	plus body: 84/36a	62	—	5
medium-sized, round-bottomed bowls	Nile B 2, sandy	plain	—	—	84/ 36	—	1
medium-sized, hemispherical cups	Nile B 1 fine,	plain	84/17	—	3	—	2
medium-sized, hemispherical cups <sup>306</sup>	Nile B 1 fine,	red-coated	—	plus bodies: 84/16;41a	36	—	3 (add 9) <sup>305</sup>
medium-sized, hemispherical cups	Nile B 1, many organic particles	red-coated	84/1	—	—	—	1
medium-sized bowl, inturned rim	Nile B 2	red-coated	—	plus part of body: 84/43a	—	—	1
medium-sized carinated bowl or cup	Nile B 1, many organic particles	plain, red rim	—	plus part of body: 84/42a	—	—	1
small, flat-based cups	Nile B 1, fine	plain	84/20	—	19	(parts) 3	4
small, flat-based cups	Nile B 1, fine	red-coated	84/13 plus 1 smaller	—	18	2	6 (add 9) <sup>305</sup>
small, carinated tureens	Nile B 1, many organic particles	plain	84/9;10	—	21	—	5
small, carinated tureens	Nile B 1, many organic particles	red-coated	—	—	8	—	1
large, wide-mouthed jars with profile rims and decorative grooves	Nile B 2	red-coated (one example not over bottom part)	—	plus body 84/24	3	2 (second example)	
medium-sized, wide-mouthed jars	Nile B 2	plain	—	plus body: 84/29	—	—	1
medium-sized, wide-mouthed jars with profile rims	Nile C, near B	red-coated	—	plus body: 84/28	1	—	2
small, wide-mouthed jars flat-based	Nile B 1, many organic particles	plain	84/8	1	—	—	2
small, wide-mouthed jars	Nile B 1, many organic particles	red-coated	84/14	—	25	3	4
small, flat-based jars, conical neck	Nile B 1, many organic particles	plain	84/2 two examples	—	31	—	5
small, flat-based jars, conical neck	Nile B 2	red-coated	84/3	—	—	—	1
large broad, round bottomed bottles	Nile C, near B 2	red-coated	84/25;26	—	265	—	7
medium-sized, globular bottle	Nile B 2	red-coated	84/27	—	—	—	1
small, globular bottle	Nile C, near B 2	red-coated	—	—	84/21 (complete except for rim)	—	1
small, flat-based bottle, long neck	Nile B 1, many organic particles	plain	84/6 two examples	—	—	—	2
small, flat-based, bottle, long neck	Nile B 1, many organic particles	red-coated	84/4;5	—	5	—	3
small, flat-based, bottle, long neck	Nile B 2	red-coated	84/7	—	—	—	1
large stand	Nile B 2	red-coated	—	—	12	84/22	1
large offering stand	Nile B 2	plain	—	—	1	—	1
large offering stand	Nile C, much chaff	red-coated	—	84/23	—	—	1

<i>Shape</i>	<i>Fabric</i>	<i>Ware</i>	<i>Complete vessels</i>	<i>Rims</i>	<i>Body sherds</i>	<i>Bases</i>	<i>Minimum number of vessels</i>
medium-sized, pointed beakers	Nile B 2, less sand	handmade	—	—	36	3	3
?	Nile B 1, fine	red-coated	—	—	160	—	17 <sup>306</sup>
B. Marl clay fabrics (nos. 84/- depicted in fig. 79)							
medium-sized, round-bottomed plates	Marl C 2	plain	84/30	—	—	—	1
medium-sized, carinated bowl or stand	Marl, organic temper	plain	—	84/40	—	—	1

TABLE 3: POTTERY FOUND IN STRATA 6 AND 7 IN THE BRICK CHAMBER BASIN

Nile clay fabrics (nos. 84/- are depicted in figs. 63–74)

<i>Shape</i>	<i>Fabric</i>	<i>Ware</i>	<i>Complete vessels</i>	<i>Rims</i>	<i>Body Sherds</i>	<i>Bases</i>	<i>Minimum number of vessels</i>
large, round-bottomed plates	Nile C, near B 2	red-coated	—	3	2	—	3
medium-sized, round bottomed plates	Nile B 1, fine	red-coated inside	—	84/163a	—	—	1
medium-sized, round-bottomed plates with profile rim	Nile B 2, sandy	plain	84/150	—	—	—	1
medium-sized, flat-based plates	Nile B 2, sandy	red-coated	84/144	—	—	—	1
small, round-bottomed plates, profile rim	Nile B 2	plain	84/151	—	—	—	1
small footed plates	Nile B 2	plain	—	—	5	(parts) 3	3
small footed plates	Nile C, near B 2	plain	—	—	21	—	6
small footed plates	Nile B 2, many organic particles	red-coated	—	84/148;149	—	3 (1 flat, 1 sunken)	3
large bowls	Nile C, near B 2	thin-red-coated	—	1	—	—	1
medium-sized, round-bottomed bowls	Nile B 2, sandy	plain	84/152	—	17	—	2
medium-sized, round-bottomed (?) bowls	Nile B 1, many organic particles	red-coated	—	plus body: 84/164	—	—	1
medium-sized cup, round-bottomed (?) with profile rim	Nile B 2, sandy	red-coated	—	plus body: 84/145	—	—	1
medium-sized, hemispherical cups	Nile B 1	plain	84/12	—	77	—	7
medium-sized, hemispherical cups	Nile B 1, many organic particles	red-coated	—	84/146;166	—	—	2
small, flat-based cups	Nile B 1, many organic particles	plain	—	—	14	2	3
medium-sized, carinated cups	Nile B 1, many organic particles	red-coated	—	plus body: 84/165	—	—	1
small, flat-based carinated tureens	Nile B 1, many organic particles	plain and red-coated	—	—	14	—	3
small, flat-based beaker (?)	Nile B 2, thick	red-coated	—	84/163	—	—	1
medium-sized, wide-mouthed jars	Nile B 2	red-coated	—	84/147	5	—	1

<sup>306</sup> Here the number of body sherds was divided by 9.5, which is the average of 5 and 14. As explained in the preceding note, it was not possible

to assign the sherds either to medium-sized hemispherical cups or to small, flat-based ones.



<i>Shape</i>	<i>Fabric</i>	<i>Ware</i>	<i>Complete vessels</i>	<i>Rims</i>	<i>Body sherds</i>	<i>Bases</i>	<i>Minimum number of vessels</i>
large to medium-sized oval, round-bottomed jars with short neck	Nile B 2	red-coated	—	84/162	—	—	1
large, round-bottomed, bottles, broad, narrow neck	Nile C, near B 2	red-coated	—	4 necks	133	—	4
?	Nile B 1, many organic particles	red-coated	—	—	44	—	5
medium-sized, conical containers	Nile B 2, less sand	hand-made plain	—	—	1	—	1

TABLE 4: POTTERY FOUND IN THE HOLE AT THE ENTRANCE INTO THE BRICK CHAMBER  
(nos. 84/- are depicted in figs. 63–73)

<i>Shape</i>	<i>Fabric</i>	<i>Ware</i>	<i>Complete vessels</i>	<i>Rims</i>	<i>Body sherds</i>	<i>Bases</i>	<i>Number of vessels</i>
medium-sized, flat-based bowls	Nile B 2, sandy	plain	84/142;143	—	—	—	2
medium-sized, hemispherical cup	Nile B 1	plain	—	plus body: 84/137	—	—	1
medium-sized, hemispherical cup	Nile B 1, fine	red-coated	84/138	—	—	bottom missing	1
medium-sized, ring-footed cup	Nile B 1	plain	—	—	—	84/139	1
large beaker jar	Nile B 2	plain	—	84/153	5	—	1 (2 ?)
large bottle	Nile C, near B 2	red-coated	—	plus neck 84/140	6	—	1 (2 ?)
medium-sized bottle	Nile B 2	red-coated(?)	—	plus part of body: 84/141	—	—	1
large offering stand	Nile B 2	plain	—	—	—	84/154	1

H. POTTERY FOUND IN A SQUARE HOLE AT THE ENTRANCE INTO THE BRICK CHAMBER

Newly found during the 1984/85 season.  
Table 4.

Drawings: figs. 63–74.

This pottery was found in a roughly square hole (50 x 50 cm.) which had been left open in the brick pavement of the chamber (fig. 16, pl. 86). If a sill (of stone or wood?) existed at the inner part of the doorway, it would have covered this hole. Since no trace of a sill was found, however, it is impossible to say whether the pottery was deposited before such a sill was installed, or after it was destroyed.

In the lower part of the hole, and so presumably deposited first, were the hemispherical cups (84/137, 84/138, fig. 65), the lower part of a bowl (84/139, fig. 65), the upper part of a medium-sized bottle (84/141, fig. 72) and the base of an offering stand (84/154, fig. 73). In the upper layer, if one can speak of such a thing in a situation in which many sherds have been deposited obliquely, were the two bowls (84/142 and 143, fig. 64), the top of a beaker jar (84/153, fig. 66) the neck of a large bottle (84/140, fig. 68), part of a handmade container like 84/52, and various sherds of large bottles, not necessarily belonging to the same vessel as the neck fragment 84/140.

The position of the pottery suggests that it was carefully deposited. Although with only a few exceptions—primarily

the two bowls—the pots were broken and fragmentary, the sherds filled the hole tightly and the uppermost layer was flush with the brick pavement. Furthermore, it is probable that a liquid was poured over the hole, because the uppermost pieces showed a yellow discoloration.<sup>307</sup>

If the group does indeed constitute a ritual deposit,<sup>308</sup> it should be noted that its date is somewhat later than the pottery found in the basin-like depression in the same room (see page 52). The doorway deposit must therefore be connected with the latest ritual use of the room, either at the time when the round object stood at its eastern end (see page 53), or after it had been removed.

I. POTTERY FOUND BELOW THE PAVEMENT OF THE CABIN IN THE NORTHWEST CORNER OF THE NORTHERN BRICK LANE OF THE CAUSEWAY

Newly found during the 1984/85 season.  
Table 5.

Drawings: figs. 63–74.

<sup>307</sup> This discoloration was most pronounced in 84/137, 84/142, and 84/143. Numbers 142 and 143 were uppermost in the hole; some liquid may have been poured over them when they were in place reaching 137, lying immediately below 142 and 143, through the gap between them. It should be noted that 137 is a sherd, not a complete vessel.

<sup>308</sup> There is a late Old Kingdom deposit at the entrance of a temple: W. M. Flinders Petrie, *Abydos II* (Twenty-fourth Memoir of the Egypt Exploration Fund. London, 1903) 20, pl. 53 at “117.” Weinstein, *Foundation Deposits* 29.

TABLE 5: POTTERY FOUND IN THE PAVEMENT OF THE CABIN  
IN THE NORTHWEST CORNER OF THE NORTHERN BRICK LANE OF THE CAUSEWAY

(nos. 84/- are depicted in figs. 63-74)

Shape	Fabric	Ware	Complete vessels	Rims	Body sherds	Bases	Minimum number of vessels
large, round-bottomed plates	Nile C	red-coated inside	—	plus body: 84/192;193	—	—	2
large, round-bottomed plates	Nile C	red-coated	—	84/190	—	—	1
medium-sized, round-bottomed plates	Nile B 2	plain	—	plus body: 84/189;191	—	—	1
small, flat-based plates	Nile B 1, many organic particles	plain	84/161*	—	—	—	1
large cup with profile rim	Nile C	plain, red rim	—	84/157	—	—	1
medium-sized, hemispherical cups	Nile B 1	blackened	84/158	—	—	—	1
medium-sized, hemispherical cups	Nile B 1	red-coated	84/159; 84/160*	—	—	—	2
medium-sized, wide-mouthed jar, bag-shaped	Nile B 2	plain	—	plus body: 84/168*	—	—	1
medium-sized, flat-based beaker jar	Nile B 2	plain	—	84/185; 84/186	—	84/188	3
small beaker jar with round rim	Nile B 1, many organic particles	red-coated outside	—	plus body: 84/155	—	—	1
large, round-bottomed, necked bottles	Nile C, near B 2	red-coated	—	plus necks: 84/170; 84/171; 84/173; 84/181 only rims: 84/172; 84/174; 84/175; 84/176; 84/177; 84/178; 84/179; 84/180; 84/182; 84/187	320 plus 5*	9	14
medium-sized bottle with conical neck	Nile B 1, many organic particles	plain	—	plus neck: 84/156	—	—	1
small globular bottle	Marl C	plain	—	plus shoulder: 84/183, 184	4	1	1

\*found between large bricks west of cabin; see below.

The group was found in layer 3 of the profile A-B (pl. 78a), layer 2 in profile E-F (pl. 79a, around the number 12), and in layer 4 of profile G-H (pl. 79b). All these differently numbered levels are really one and the same stratum, which underlies the brick pavement of the cabin. The analysis of the context has shown (page 27) that this layer was a fill brought in before the pavement was laid; its pottery is therefore either earlier than or contemporary with the erection of the cabin.

Included in this group are vessels 84/160, 84/161, and 84/168. Although these pots—as well as five body sherds of large bottles—were not found covered by the pavement, their position between the large bricks protruding westward from the present remains of the cabin (pls. 12e, 79a no. 4) suggests that they originally lay partly below the west wall of the building, and partly below the bench-like feature which bordered its west wall on the west side (pl. 80). The neat packing of the pots suggests that they were found in their original positions. Their date should thus be the same as that of the pottery found under the preserved brick pavement.

J. POTTERY FOUND INSIDE THE REMAINING PART  
OF THE DRAIN RUNNING EASTWARD FROM THE CABIN

Newly found during the 1984/85 season.  
Table 6, figs. 63-74.

The provenience of these sherds must be treated with caution because of damage to the drain since the original excavations in 1914 (see page 29). The presence of two sherds of the original drain pipe suggests, however, that the lowest part of the drain may have preserved its ancient fill. In this case, sherds 84/131-134 could date from the time when the cabin was in use.

The marks on the two sherds of a pipe (84/135-136) show that they were made by hand (possibly coiled?); the thick profile rim was folded over, and the rim then smoothed inside while the pipe was turned, either on a turning device or in the hands of the potter. Marks of pressing and scraping thus appear over all surfaces; only inside, below the profile rim, do parallel lines appear.

TABLE 6: POTTERY FOUND INSIDE THE DRAIN RUNNING EASTWARDS FROM THE CABIN

(nos. 84/- are depicted in figs. 63-74)

Shape	Fabric	Ware	Complete vessels	Rims	Body sherds	Bases	Minimum number of vessels
medium-sized bowl (carinated?)	Nile B 2, fine	red-coated inside	—	plus body: 84/134	—	missing	1
medium-sized, hemispherical cup	Nile B 1, many organic particles	plain	—	plus body: 84/132	—	missing	1
medium-sized, hemispherical cup	Nile B 1, many organic particles	red-coated	—	plus body: 84/133	—	missing	1
medium-sized bottle	Nile B 2	red-coated	—	84/131	—	—	1
large pipes	Marl C	plain, handmade and turned	—	84/135	—	84/136	2 or 1

K. POTTERY FOUND IN THE DUMP HEAPS  
EAST OF THE CABIN AND CAUSEWAY WIDENING

All pieces are shown in figs. 63-74.

This group of sherds was found in the 1984/85 season. The re-excavation in the area east of the causeway widening (see pages 32-33) was undertaken mainly to clarify the nature of the material in this dump. Pottery sherds were collected as diagnostic samples to obtain a relative chronology of the various heaps of refuse.

Sherds from strata 9 and 10 of profile C-D (pl. 78b) were removed 25 cm. at a time; seven such sweeps were removed from the surface down to the hard floor (11), which was the main floor outside the brick causeway wall. The following diagnostic sherds were recorded:

*Second sweep of strata 9-10 in profile C-D (pl. 78b)*

84/101: Rim and neck of a large bottle, Nile C, with red ochre coating.

*Third sweep*

84/108 (fig. 64): Rim and part of body of large bowl with profile rim and rounded walls. Nile C, with much chaff. Surface badly preserved, but apparently interior bore two bands of red ochre wash; exterior was either wholly or partly red, rest self-slipped.

84/112 (fig. 64): Hemispherical cup, base missing. Nile B 1. Inside only red ochre wash, outside self-slipped. Vessel index ca. 177.

84/113 (fig. 65): Hemispherical cup, upper part. Nile B 1. Very thin walls. Red rim, rest self-slipped. Vessel index ca. 200(?).

84/106 (fig. 64): Upper part of medium-sized, carinated cup with very sharp and deep groove below rim. Nile B 1. Red ochre wash inside and out.

84/114 (fig. 64): Complete small, flat-based cup. Nile B 1, with many organic particles. Plain surfaces.

84/102 (fig. 69): Rim and neck of a large bottle. Nile C. Red ochre wash, turned dark in firing.

84/103, 104, 105 (figs. 70, 71): Rims of large bottles. Nile C. Red ochre wash.

*Fifth sweep*

84/109 (fig. 63): Rim and part of body of large plate. Nile C, with organic particles not very large in size. Inside red ochre wash, outside sooted.

84/107 (fig. 65): Most of a hemispherical cup; base missing. Nile B 1. Red ochre wash inside and out.

84/111 (fig. 73): Lowest part of a medium-sized stand with profile end. Nile B 1. Thick red ochre wash covers the preserved part of the vessel.

*Seventh sweep: (distinctly ashy layer)*

84/98 (fig. 68): Rim and part of neck of a large bottle. Nile C, powdery consistency. Red ochre wash, peeling away.

84/99 (fig. 68): Rim and neck of a large bottle. Nile C, crumbly consistency. Red ochre wash, peeling away.

84/100 (fig. 71): Rim and part of neck of a large bottle with large narrow neck. Nile C, much like 84/98 and 99. Red ochre wash.

*Sherds from stratum 8 of profile C-D (pl. 78b)*

This stratum is the fill of a waste water receptacle of the cabin drain and the refuse heaped on top of it (page 32).

84/121 (fig. 65): Upper part of a hemispherical cup. Nile B 1. Very thin walls. Self-slipped, red rim.

84/92 (fig. 68): Rim, neck and part of shoulder of large bottle. Nile C. Red ochre wash turned light color in firing. Potter's mark incised before firing.

84/94 (fig. 69): Rim and neck of large bottle. Nile C. Red ochre wash turned light by firing.

84/95 (fig. 69): Same. Red ochre wash, partly peeled away.

84/96 (fig. 69): Same. Nile C, rather soft. Red-coated.

84/97 (fig. 71): Same. Nile C, hard-fired. Red-coated.

84/116 (fig. 70): Same. Nile C. Red ochre wash, discolored to brown.

84/117 (fig. 71): Same. Nile C, soft. Red ochre wash.

84/118 (fig. 71): Same. Nile C. Red ochre wash.

84/119 (fig. 70): Same. Nile C. Red ochre wash.

84/120 (fig. 69): Same. Nile C. Red ochre wash.

84/167 (fig. 68): Same. Nile C. Red ochre wash.

84/115 (fig. 73): Lowest part of a stand or offering stand (burner). Nile C, much like large bottles. Discolored to dark gray. Plain, completely wheel-made.

L. SHERDS FROM THE AREA JUST NORTH OF THE WAVY WALL, BELOW THE PRESENT SURFACE

Newly found during the 1984-85 season.  
 Drawings: figs. 63-74.

The pottery was lying in the sand which covered the mud floor just north of the wavy wall (page 31, pl. 76). It may be assumed that the earlier excavation did not clean this floor fully, because the layer with the sherds gave the impression of being an ancient debris layer. One cannot, however, be completely sure that the sherds were deposited at their findspot during ancient times.

Some diagnostic pieces were selected for publication here:

- 84/129(fig. 66): Rim and neck of medium-sized, short-necked jar with a heavy profile rim. Nile C. Surface rather worn, but probably plain.
- 84/130 (fig. 66): Rim and part of body of wide-mouthed jar with thickened rim. Could also be carinated (?). Nile C. Much worn.

- 84/124 (fig. 69): Rim and neck of large bottle. Nile C. Red-coated, much weathered and sintered.
- 84/125 (fig. 69): Rim of large bottle. Nile C. Red-coated.
- 84/126 (fig. 71): Same. Nile C. Red-coated.
- 84/127 (fig. 71): Same. Nile C. Red-coated, much weathered and windblown.
- 84/128 (fig. 68): Same. Nile C. Red-coated, but ochre wash almost completely peeled away.
- 84/122 (fig. 74): Rim of large, egg-shaped bottle with grooved neck. Marl clay, fabric C (compact?). Plain, much worn.
- 84/123 (fig. 74): Part of similar vessel, but only a fragment from the transition between neck and shoulder is preserved. Marl clay, fabric C, the compact version. Plain. On the inside, part of added clay mass visible, showing that neck was joined to shoulder at a later stage of manufacture.

M. POTTERY FOUND ABOVE THE TRANSPORTATION ROAD IN THE SOUTHEAST AREA OF THE CEMETERY

Newly found during 1984/85 season  
 Table 7.

TABLE 7: POTTERY FOUND ABOVE THE TRANSPORTATION ROAD IN THE SOUTHEAST AREA OF THE CEMETERY  
 A. Nile clay fabrics (nos. 84/- are depicted in figs. 63-74)

Shape	Fabric	Ware	Complete vessels	Rims	Body sherds	Bases	Minimum number of vessels
large, round-bottomed plates	Nile C	plain	—	4	5	2	4
large, round-bottomed plates	Nile C	inside red-coated	—	84/63 plus two more	10	—	3
large, round-bottomed plates	Nile C	inside blackened	—	—	3	—	1
medium-sized, round-bottomed plates	Nile B 2	plain	—	1	1	—	1
medium-sized, round-bottomed plates	Nile B 2	inside red-coated	—	1	—	—	1
small, round-bottomed plates	Nile B 1	plain	—	1	3	—	1
small, round-bottomed plates	Nile B 1	inside red-coated	—	—	1	—	1
small, flat-based plates	Nile B 1	plain	—	—	7	2	2
large bowls	Nile B 2	plain	—	—	1	—	1
large bowls with angular rims	Nile B 2, sandy and chaff	red-coated	—	plus body: 84/43	—	—	1
large bowls	Nile C	red-coated	—	2	—	—	2
medium-sized hemispherical cups	Nile B 1	plain, red rim	84/41	—	—	—	1
medium-sized hemispherical cups	Nile B 1	red-coated	—	plus piece of body: 84/42	—	—	1
small, flat-based cups	Nile B 1	plain	—	—	—	7	7
small, flat-based cups	Nile B 2	plain	—	—	6	—	2
large, flat-based jars	Nile B 2	red-coated	—	—	7	7	7

<i>Shape</i>	<i>Fabric</i>	<i>Ware</i>	<i>Complete vessels</i>	<i>Rims</i>	<i>Body sherds</i>	<i>Bases</i>	<i>Minimum number of vessels</i>
large, flat-based jar or bottle	Nile C	red-coated	—	—	some of the 4808 b.s for large bottles could belong here (see below)	84/56	1
medium-sized beaker jar	Nile B 1	plain	—	1	—	—	1
medium-sized beaker jar	Nile B 2, fine	plain	—	—	12	—	1
medium-sized beaker jar or jar with conical neck	Nile B 1	red-coated	—	—	3	1	1
medium-sized, flat-based beaker jars	Nile B 2	plain	—	23 among them: 84/59–50	472	29 among them: 84/57–58	29
medium-sized, flat-based jar (carinated?)	Nile B 2, fine	plain	—	—	—	1	1
small, flat-based slender vessel	Nile B 2	plain	—	—	—	5	5
small, flat-based jar	Nile B 2	plain	½ vessel	—	—	—	1
small, flat-based jars	Nile B 2	red-coated	—	3 necks	3 shoulders	—	3
small, globular jars	Nile B 1	plain	—	—	4	—	1
small, globular jars	Nile B 1	plain, red spots	—	—	1	1	1
large, round-bottomed bottles	Nile C	red-coated	—	77 among them: 84/44–48, 84/64–91	4808 (some with bases)	—	77
medium-sized, round-bottomed bottles, conical neck	Nile B 1	red-coated, polished	—	—	1 shoulder	—	1
offering stands (burners)	Nile B 2	plain	—	—	—	5 (pedestals)	2
offering stands (burners)	Nile C	plain	—	—	—	1	1
large platters	Nile C	handmade, plain	—	—	5	—	1
medium-sized, conical containers	Nile C	handmade, plain	—	plus part of body, no difference in rims: 314	2018	111	111
beaker	Nile C	handmade, plain	—	—	1	1	1
bread moulds	Nile C	handmade, plain	—	—	11	11	3
B. Marl clay fabrics (nos. 84/- depicted in fig. 74)							
large, wide-mouthed jars	marl B	wheelmade, plain	—	plus part of body: 84/59	—	—	1
large, wide-mouthed, flat-based jars	marl C 1	handmade, turned, plain	—	plus part of body: 84/51	46	1 (flat)	1
large, wide-mouthed jar	marl C 2	handmade, turned, plain	—	—	4	—	1
large, wide-mouthed jar with short neck	marl C 1	handmade, fine turning marks, plain	—	plus shoulder: 84/60	—	—	1
large, egg-shaped bottles with conical grooved neck	marl C, compact	handmade, turned, plain	—	—	6	—	1

Drawings: figs. 63–74.

The remains of the transportation road will be published elsewhere. For its position, see “sideways” pl. 75. The pottery, which had nothing to do with the road, is included here because it represents a link between the pottery listed so far and the repertoire of the time of Amenemhat III, known from recent excavations at his pyramid at Dahshur.

The layers above the remains of the transportation road were as follows. Above the beams which strengthened the road below its surface was a hard layer of white limestone chip and gypsum mortar; this probably constituted the surface of the road. On this hard stratum lay loose gray mud mixed with some limestone chip. Above this followed a stratum of dark red sand, which can be recognized as the natural ground in the area. On this red sand lay the layer of tightly packed sherds, 30 cm. deep, and extending from the area of the road to the next tomb shaft to the north. The sherd layer was covered only by a thin stratum of mud and earth, which constitutes the present-day surface.

Even before a detailed study of the archaeology of the area has been undertaken, it can be said that the pottery considered here must have been deposited at a time when the transportation road had fallen into disuse and when some tomb shafts had already been dug around it. The latter circumstance can be inferred from the presence of the red sand, which must surely result from the removal of natural ground when a shaft was dug.

Nothing can be said at present about the origin of the sherds, but it seems certain from the repertoire that this pottery originally was not deposited in tombs. It is probable that the sherd accumulation belonged to another dump from the various ritual and everyday activities around the pyramid complex.

At the eastern end of the area excavated in order to clarify the origins of the large beams, there was found a wall of bricks. This wall must in some way belong to structures of later date than the road. Hemispherical cup 84/93, of Nile clay fabric B 1, plain, with a red rim, was found directly at the side of this wall (fig. 65), and therefore probably belongs to one of the later structures. It is one of the latest pieces treated in this chapter. The sherd-count given in Table 7 was made on a random selection.<sup>309</sup>

## 2. Clay Material, Fabrics, Methods of Manufacture, and Surface Treatment

The categories used here to describe the physical properties of the pottery follow the “Vienna System.”<sup>310</sup> This system of classification distinguishes primarily between *Nile alluvium* and *marl clay* fabrics. The main difference between the two classes is the amount of calcium and silica present. Nile clay fabrics contain less than 8% of CaO and more than 50% SiO<sub>2</sub>. Marl clay fabrics contain 8 to 20% CaO and less than 50% SiO<sub>2</sub>.<sup>311</sup> Most marl clay sherds and pots react positively to a drop test with hydrochloric acid, especially if the color of the fracture is light red or pale brown.

Further differences between the two classes of material lie in the hardness (Nile clay fabrics, 3–3.5 on the Mohs scale; marl clay fabrics, around 4–5), the greater density of the marl, and the fact that in the Nile clay fabrics, organic particles are usually clearly aligned parallel to the orifice of the vessel. This last fact is at least true for the periods after the later Old Kingdom and the introduction of simple wheel techniques. Black zones in the core of the fracture are frequently found in Nile clay fabric vessels; in marl clay fabrics, black or gray zones occur only in

fabrics C and D, while marl fabrics A and B show only red and pale brown core zones. A richness in variously colored zones occurring in the same pot is typical for the Nile alluvium class.

The following Nile clay fabrics are characteristic of Middle Kingdom pottery in general:

*Nile B 1*: The diagnostic features are abundant inclusions of fine sand and some occasional inclusions of coarse sand. Scattered, fine organic particles under 2 mm. in size are always present and are best seen in fractures parallel to the orifice plane of the vessel. Mica particles are common. Colors of the fractures range from reddish brown to brown (Munsell 10R 4/8–7.5YR 5/6). Black, black bordered by red, or red bordered by purple zones are often found in the core of the walls. The porosity is moderate.

*Nile B 2*: The diagnostic features are fine- to medium-textured sand grains, together with conspicuous amounts of organic inclusions usually under 2 mm. in size; although larger particles occur occasionally. The latter appear especially on the surface of the vessels. Fractures vary again from reddish brown to yellowish brown (Munsell 10R 4/8 to 10YR 5/6), with the various core zones the same as for Nile B 1. The porosity is moderate.

*Nile C*: Medium- to coarse-textured rounded sand inclusions, and straw and chaff particles 1 to 5 mm. in size are diagnostic features. Medium-sized to coarse particles of various rocks are also found, occasionally including partly decomposed limestone, ash, and, very rarely, grog. The porosity is rather high and the fracture often soft and crumbly. Colors again vary between reddish brown and yellowish brown (Munsell 10R 4/8 to 10YR 5/6). Black zones are often very thick. In the harder-fired variants, purple zones with variously shaded red borders occur.

In the class of marl clay fabrics, there are several which are very rare in the Memphite region during the Middle Kingdom. These rare ones belong to group A:

*Marl A 2*: For all marl clay fabrics of group A, the high density is diagnostic. Marl A 2 is, furthermore, very homogeneous, with only scattered fine-textured limestone inclusions, some sand grains, and the mudstone inclusions typical of all Egyptian marl clay fabrics. The porosity is considerably lower than that of Nile clay fabrics. Colors vary from light red (Munsell 10R 6/8 to 5/8) to pink or light reddish brown (Munsell 5YR 7/4 to 6/4). The exteriors of the vessels usually show a pale red (10R 6/4), pale brown (10YR 8/3), or even white (5Y 8/1) surface which is not a slip, but a naturally occurring color change of the surface zone due to firing. Marl A 2 is an Upper Egyptian fabric.

*Marl A 3*: Again, the fracture is very homogeneous and dense. The colors are never red or brown, but pale gray or greenish gray (Munsell 5Y 7/2 to 8/4 or even 6/4). Limestone particles have disappeared in this fabric as a result of firing temperatures of more than 1000°. The irregular voids found in the

<sup>309</sup> The same group of workmen removed the layer of potsherds during three days. The count was made of all sherds removed on the second day. For methods of random sampling see Martha Joukowsky, *A Complete Manual of Field Archaeology, Tools and Techniques of Field Work for Archaeologists* (New York, 1980) 57, 286, 497–500.

<sup>310</sup> Bourriau, *Umm el-Ga'ab* 14–15. H. A. Nordström, *LÄ VI*, 631–634 and *Introduction to Ancient Egyptian Pottery*, forthcoming.

<sup>311</sup> Cf. W. Noll, “Bemalte Keramiken Altägyptens: Material, Rohstoffe und Herstellungstechnik” in Do. Arnold, *Studien* 108 Tabelle 2. C. A. Hope, H. M. Blauer, and J. Riederer, “Recent Analyses of 18th Dynasty Pottery” in Do. Arnold, *Studien* 148, Table 1.



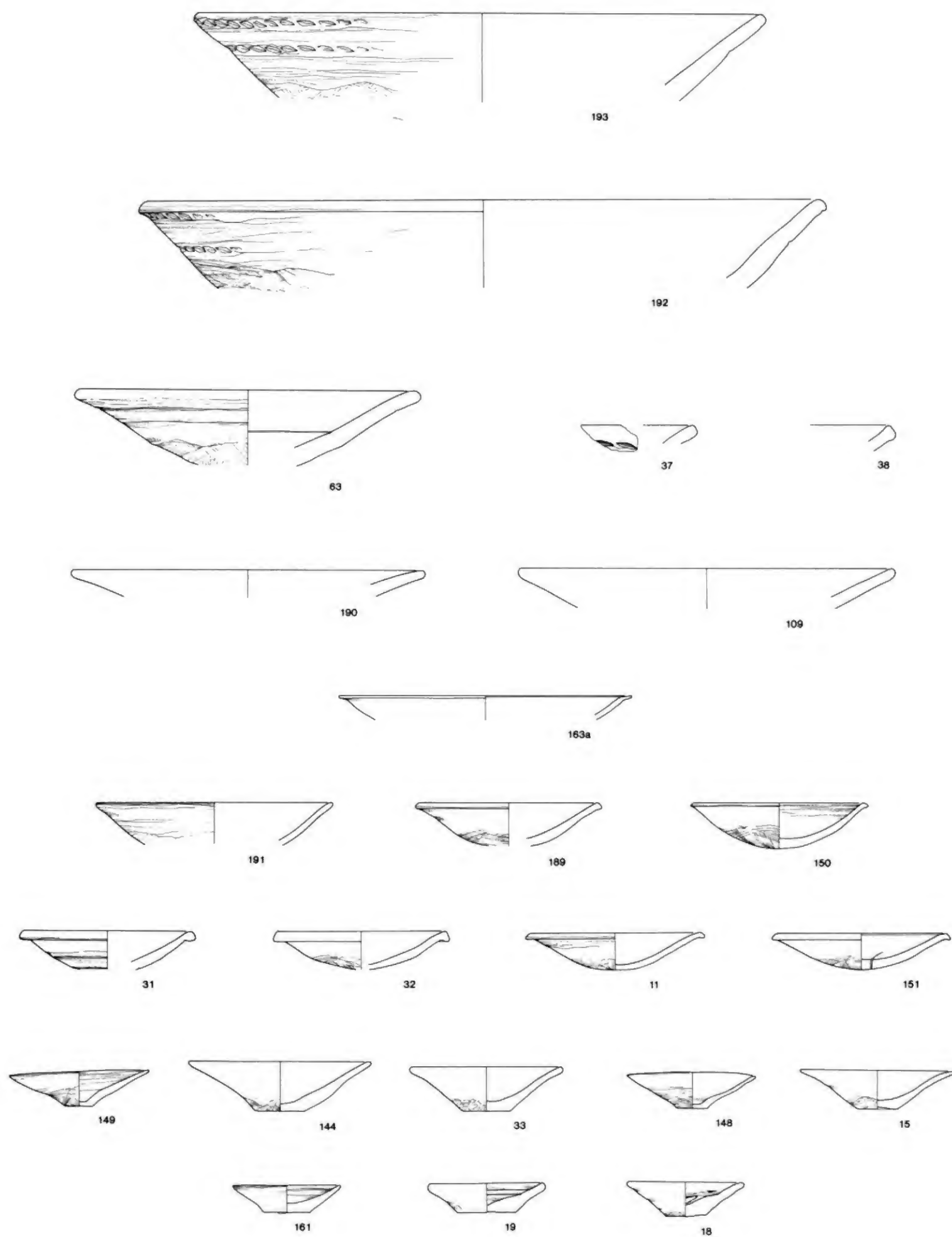


Fig. 63. Pottery: Nile clay, plates. Nos. 11, 15, 18, 19, 31-33, 37: see table 2; no. 63: see table 7; no. 109: see page 121; nos. 144, 148-150, 163a: see table 3; nos. 161, 189-193: see table 5. All numbers are 84/-. Scale 1:4.

fractures of A 3 vessels were probably originally filled with limestone inclusions. Occasional organic particles have left elongated voids. Spots of incipient vitrification point again to the high temperatures used to fire this fabric, which is certainly of Upper Egyptian origin.

*Marl B:* Fracture usually pale brown or whitish green (Munsell 10YR 8/4 or 5Y 8/2) and very gritty. The groundmass is homogeneous. The temper is very abundant, angular to sub-angular, fine- to medium-textured sand in an estimated proportion of 40%. Dark mica and occasional chaff occur.

*Marl C:* This is the most common marl clay fabric in the Memphite region and therefore also at Lisht.<sup>312</sup> The fabric group is certainly not Upper Egyptian, but specific to the area of Lisht and Memphis.<sup>313</sup> Two variants seem to represent extremes of a range of variations rather than truly separate fabrics:

*Marl C 1:* The diagnostic feature is a hard, dense, well-fired (between 850 to 1000°) groundmass of light red or gray color (Munsell 10R 6/6, 6/8, 5/8 to 6/4, 5/4) in which numerous more or less decomposed limestone particles are embedded, giving the feature a speckled appearance. Under low magnification the speckles are seen to be voids on the walls of which calcite crystals have formed. Fine sand is always present. There are often streaks of nuclei of partly vitrified clay, together with elongated pores. The exteriors of vessels made of this material again show a naturally developed white surface color.

*Marl C 2:* This variant might be a lower-fired version of C 1. The color is pale red or weak brown (Munsell 10R 6/4 to 5YR 6/6). The groundmass is dense, but not sintered, and the limestone particles are intact. Some fine sand is found. The exterior is a very translucent whitish or pink color (Munsell 5YR 8/4).

The pottery found in the pyramid complex of Senwosret I at Lisht shows a number of significant variations of the general groups of fabrics just described.

*Lisht, early Twelfth Dynasty, Nile B 1:* In this group are found three variants:

- a) *Nile B 1, very fine, with only rare organic particles.* This variant invariably occurs with extremely thin-walled vessels. It may be that the thinness of the walls underlines the divergence of this variant from the ordinary Nile B 1. In the list of pottery groups given above this variant is called "Nile B 1, fine."
- b) *Nile B 1, with many organic particles:* This is the typical "fine Nile" of the early Twelfth Dynasty pottery at Lisht South. This variant contains considerably more organic particles than the ordinary Nile B 1 described above. The white, opaque rolls of vitrified clay mass, which fill the pores after the original organic particles in the clay have burned out, dominate the fractures of all vessels of this variant. In some instances even an occasional chaff particle (larger than 2 mm.) occurs. In the lists above, this variant is called "Nile B 2, many organic particles."
- c) *The ordinary Nile B 1* as described above does not occur in the pottery from the brick chamber basin. It is rare in the pottery from below the pavement of the cabin and from the hole under the door sill of the brick chamber. In the pottery from the dump east of the cabin and in the southeast area, the B 1 with more organic particles is not found, while the ordinary B 1, as described above page 124, is the usual "fine Nile."

*Lisht, early Twelfth Dynasty, Nile B 2.* Again, a number of variants occurs.

- a) *Nile B 2 fine* is rare. It is a finer variant, close to B 1.
- b) *Nile B 2, with fewer sand inclusions* seems to contain less sand than the ordinary Nile B 2 described above. The variant mainly appears in handmade vessels. In the list above, this variant is called "Nile B 2, less sand."
- c) *Nile B 2, sandy:* contains fewer organic particles than the ordinary Nile B 2, but abundant inclusions of fine to coarse sand. The fabric is typically found in medium-sized and small plates (often with heavy rims) and medium-sized bowls. In the dumps, the fabric occurs in large bowls, but it is not as frequent as in the early groups.
- d) *Nile B 2, near C:* should be seen in conjunction with the common variant of Nile C ("Nile C near B2" in the lists) in the pottery of the early Twelfth Dynasty at Lisht South. True Nile C as described above is not really found in these groups except for the two dumps east of the cabin and in the southeast area. The typical "coarse Nile" found in the other groups contains markedly less sand than the ordinary Nile C. Above all, the chaff differs: most chaff particles in the coarse Nile fabrics are around 2 mm. in size; the fabric is thus denser than the ordinary Nile C. In fact, the main difference between Nile B 2 and Nile C in the early pottery lies less in the size of the organic particles than the presence in Nile C of other materials, such as yellowish white, decomposed limestone and other dark-colored rock particles. It is therefore often difficult to differentiate between Nile B 2 and Nile C. The two fabrics appear to be extremes of a range of variations rather than two truly distinct fabrics. Thus, in our descriptions, both "Nile B 2, near C" and "Nile C, near B 2" are given.

In addition to these variants of Nile clay fabrics, there is another in which much more chaff has been added. This fabric was used for larger bowls and cups (see page 121).

An overall view of the Nile alluvium fabrics among the pottery of the early Twelfth Dynasty from Lisht South shows clearly that considerable differences exist between these fabrics and those found in the later Twelfth Dynasty, which conform rather well to the general descriptions given above.<sup>314</sup> The most noticeable difference seems to be the texture of the organic admixtures. While each of the later Nile fabrics is characterized by a distinctively different size or nature of the organic inclusions, these inclusions are much more uniform in the earlier fabrics. It seems that we are witnessing a kind of learning process by the Twelfth Dynasty potters; as time went on, they discovered exactly the right kind of organic temper for specific purposes. Once established, the tradition was carried on for the rest of the Middle Kingdom, including a good part of the Second Intermediate Period, until the Seventeenth Dynasty brought new refinements in the preparation of Nile clays for pottery.

<sup>312</sup> Do. Arnold, "Ägyptische Mergeltone (Wüstentone) und die Herkunft einer Mergeltonware des Mittleren Reiches aus der Gegend von Memphis," in Do. Arnold, *Studien*, 167–191.

<sup>313</sup> In addition to the indications that marl C was the local marl clay of the area of Lisht–Memphis cited in Do. Arnold, *Studien* 188–190 can be cited the fact that the drain-pipe used in the cabin at Lisht South (above, page 29) was made of this material. It is hardly conceivable that an object such as a drain pipe was not made locally.

<sup>314</sup> Do. Arnold, "Keramikbearbeitung," 45–47.

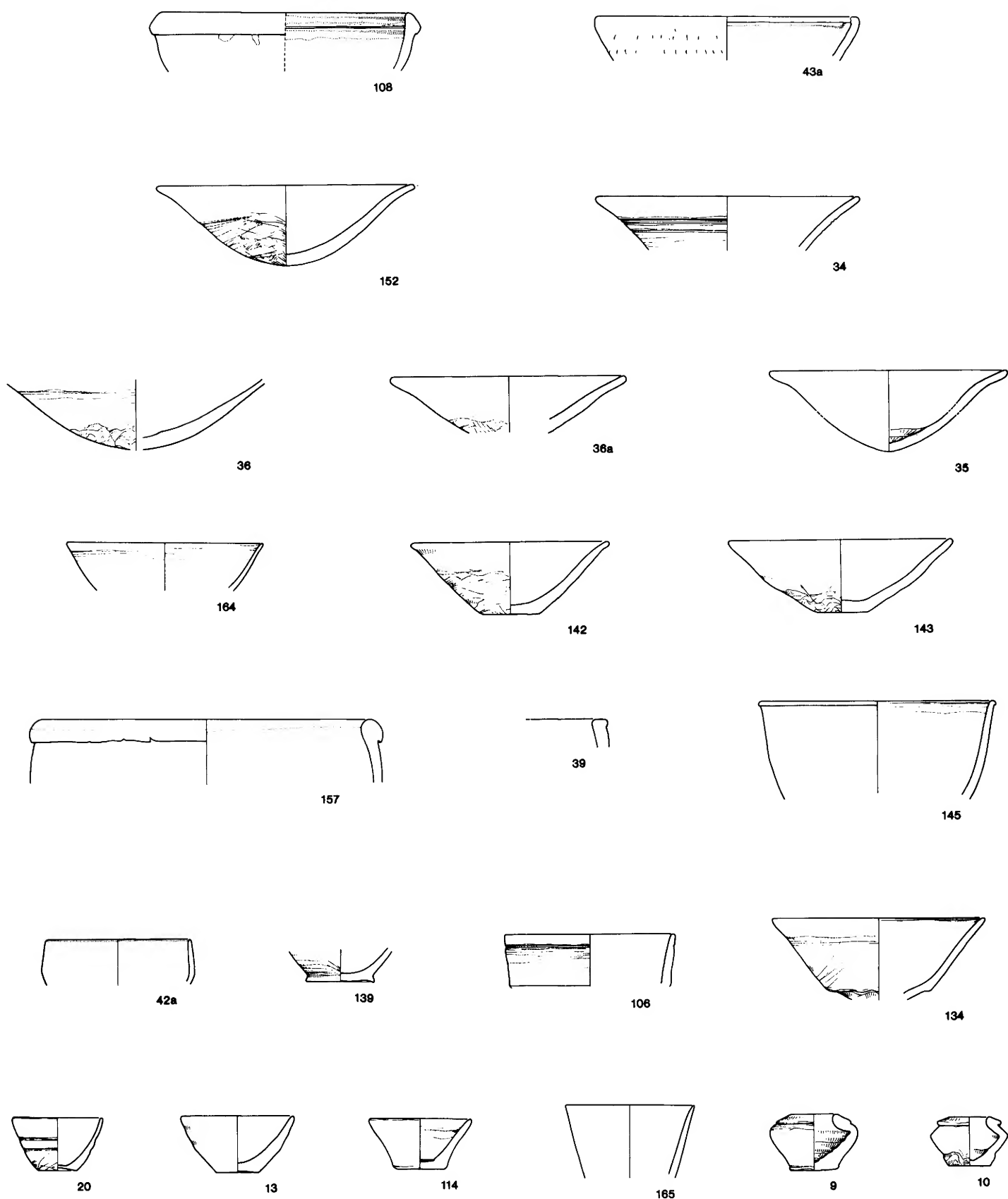


Fig. 64. Pottery: Nile clay, bowls, cups and tureens. Nos. 9, 10, 13, 20, 34–36, 36a, 39, 42a, 43a: see table 2; nos. 106, 108, 114: see page 121; nos. 139, 142, 143: see table 4; nos. 145, 152: see table 3; no. 157: see table 5; nos. 164, 165: see table 3. All numbers are 84/-. Scale 1:4.

Of the marl clays, *marl C* is clearly dominant. It should be emphasized that the examples published here are the earliest yet known of the typical *marl C* fabric; the *marl C* occurring in the later First Intermediate Period (see below, page 144) is distinctly different in texture, colors, and the consistency of the inclusions. In view of the fact that the typical *marl C* first occurring here at Lisht became the dominant marl fabric in the northern part of Egypt throughout the rest of the Middle King-

dom,<sup>315</sup> it seems safe to conclude that this fabric was an “invention” of the potters of the Lisht region—most probably, of the new capital at *It-t3wy*.

A word must be said about the variant of *marl C* called here and elsewhere “*marl C, compact*.” It is not yet possible to say

<sup>315</sup> Do. Arnold, *Studien* 183–188.

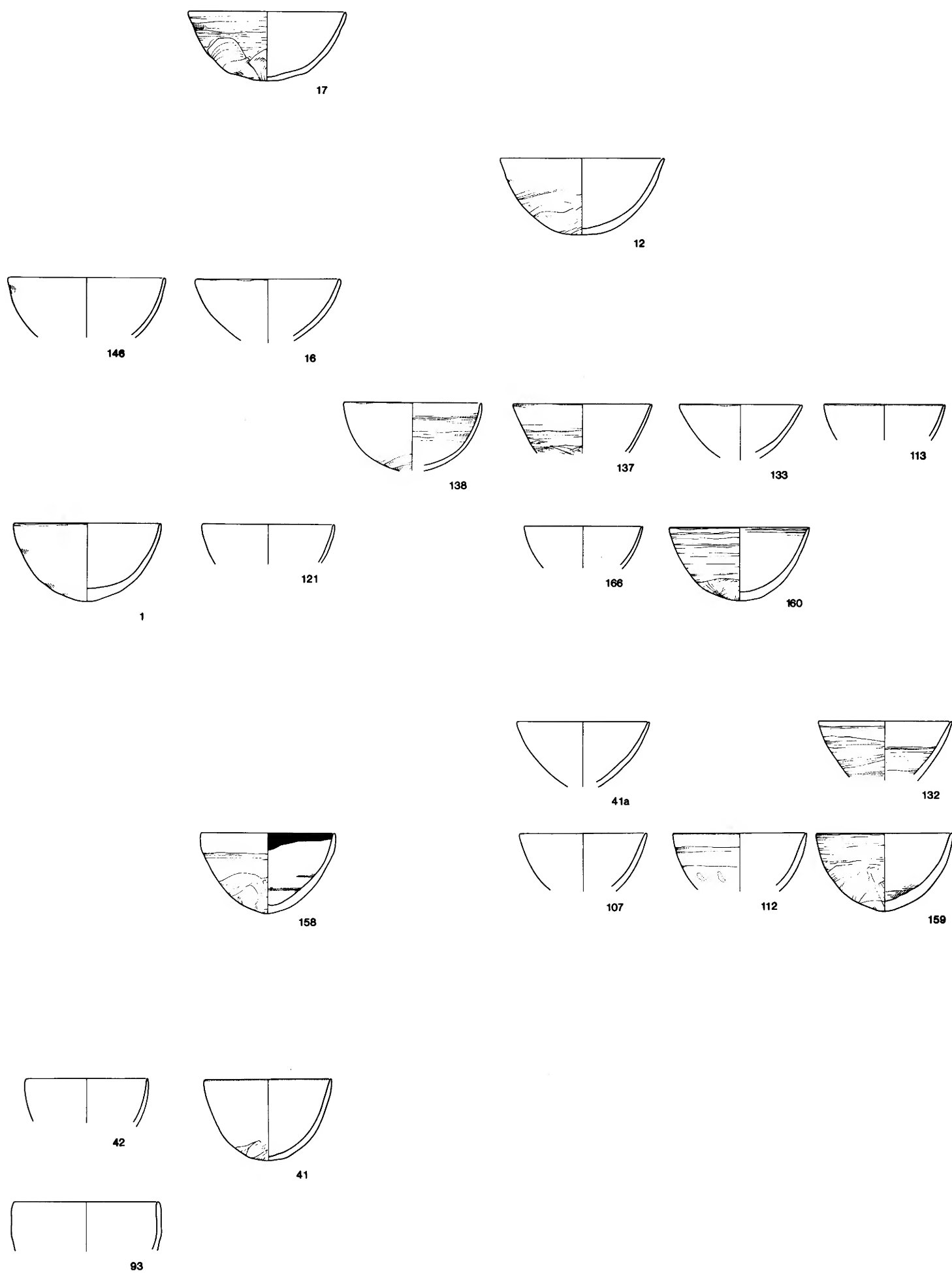


Fig. 65. Pottery: Nile clay, hemispherical cups. No. 1: see table 2; no. 12: see table 3; nos. 16, 17: see table 2; nos. 41, 42: see table 7; no. 41a: see table 2; nos. 93, 112, 113, 121: see pages 121, 124; nos. 132, 133: see table 6; nos. 137, 138: see table 4; no. 146: see table 3; nos. 158–160: see table 5; no. 166: see table 3. All numbers are 84/-. Scale 1:4.

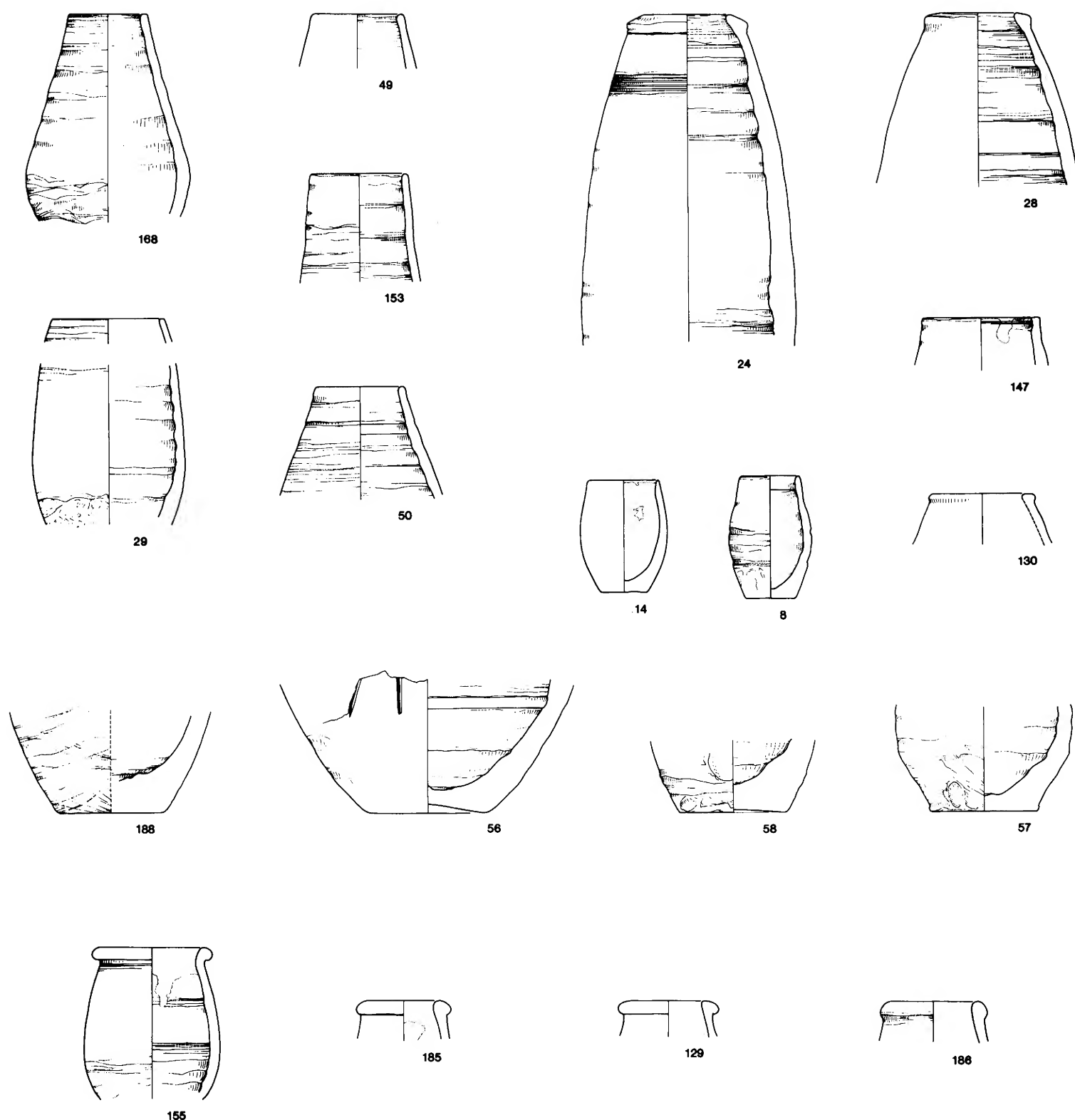


Fig. 66. Pottery: Nile clay, beaker jars. Nos. 8, 14, 24, 28, 29: see table 2; nos. 49, 50, 56–58: see table 7; nos. 129, 130: see page 122; no. 147: see table 3; no. 153: see table 4; nos. 155, 168, 185, 186, 188: see table 5. All numbers are 84/-. Scale 1:4.

whether this is a fabric on its own or—more probably—a variant of marl C. Density is the diagnostic feature of this fabric, which contains less sand than the typical C. On the other hand, the large inclusions of mudstone or undivided marl, often found in the flake like shape in the fractures, are conspicuous. The variant is mostly found in the large, egg-shaped bottles with grooved, conical necks (fig. 74).

The methods used to shape the pots can be inferred from the traces on their surfaces. Nile clay pottery is, with few exceptions, wheelmade in the initial stages. According to pictorial sources,<sup>316</sup> the low-stemmed, simple wheel was driven by the left hand of the potter. The marks on the pots show that it had considerable capacity for spinning, although the motion was

uneven. The wheel-marks are either fine, parallel, closely-spaced ridges, or shallow grooves. The central spirals inside the bottoms are usually clearly executed, and tend to be deeper than the wheel-marks on the walls of the vessel. On the whole, the wheel-marks lack both the precision and the penetration of marks on pots made with the help of an advanced wheel capable of producing a strong centrifugal force.

All the pots published here were finished by hand on the outside of the bottom. In the finer wares, this freehand-finish-ing shows an astonishing ability on the part of the potter to

<sup>316</sup> Holthoer, *New Kingdom* 31–33; Do. Arnold, *MDIAK* 32 (1976) 18–24.

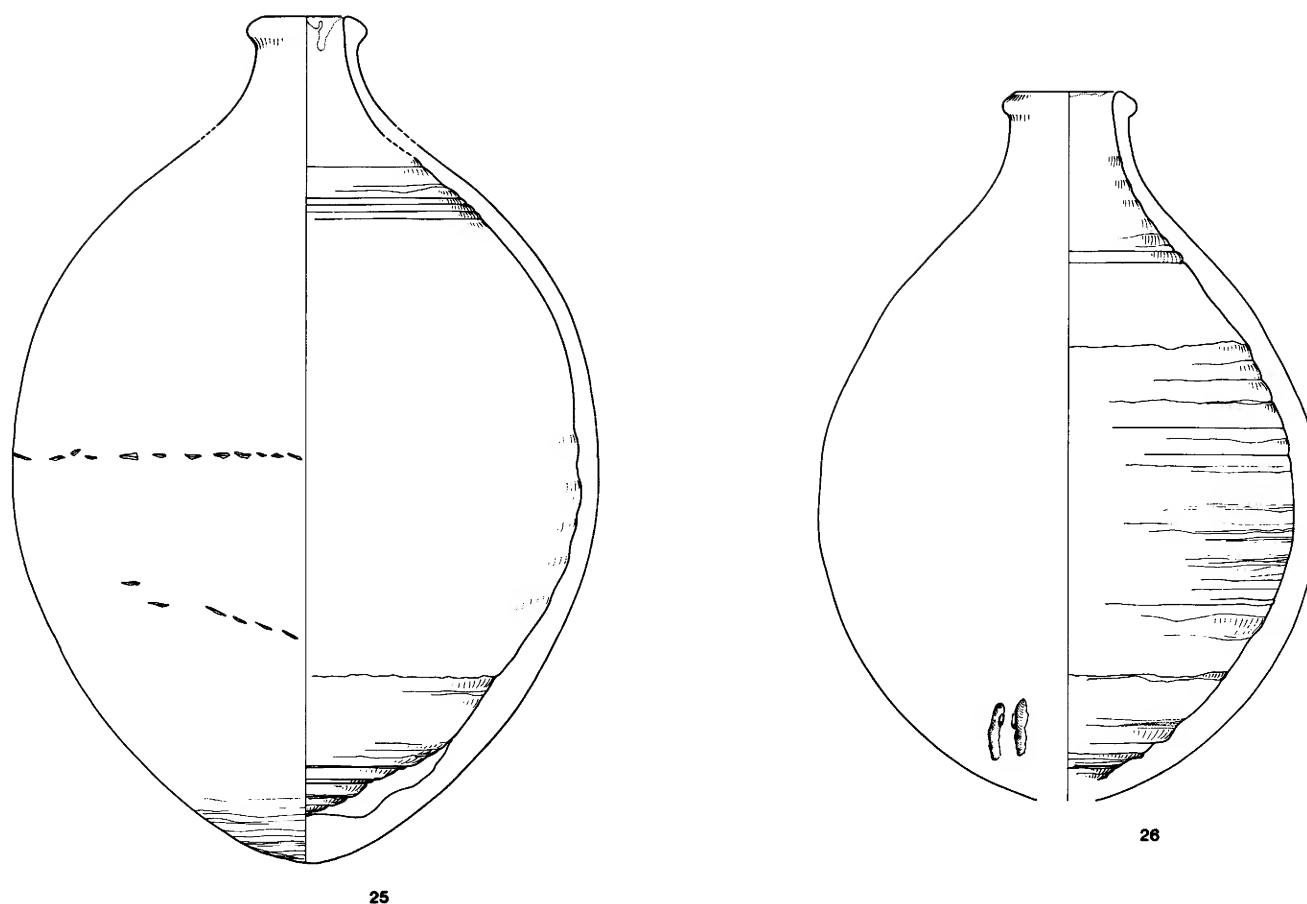


Fig. 67. Pottery: Nile clay, large bottles. Nos. 25, 26: see table 2. Both numbers are 84/- . Scale 1:4.

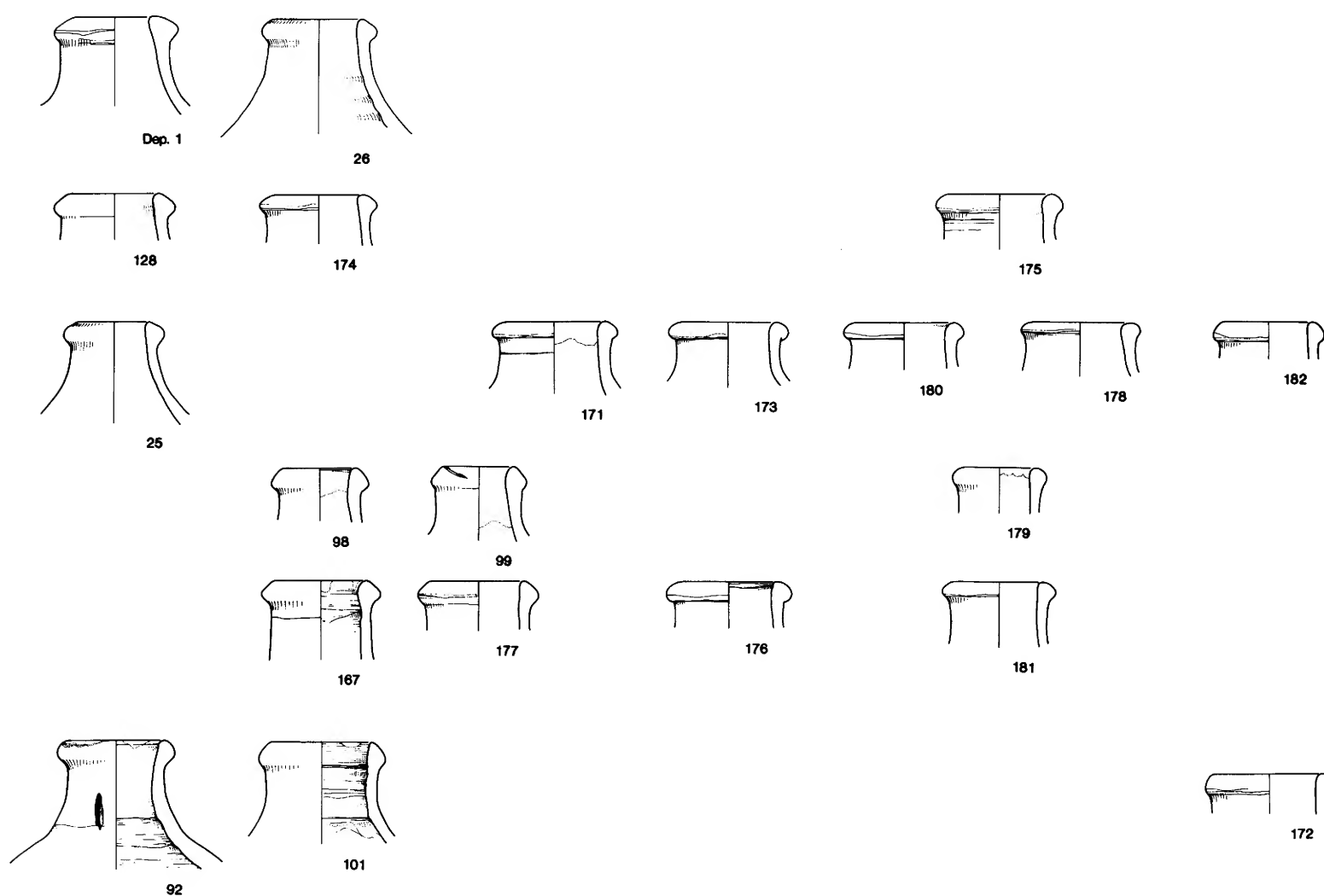


Fig. 68. Pottery: Nile clay, bottle necks. Deposit 1 (southwall deposit 1): see page 115; nos. 25, 26: see table 2; nos. 92, 98, 99, 101, 128, 167: see pages 121-122; nos. 170-182: see table 5. All numbers are 84/- . Scale 1:4.



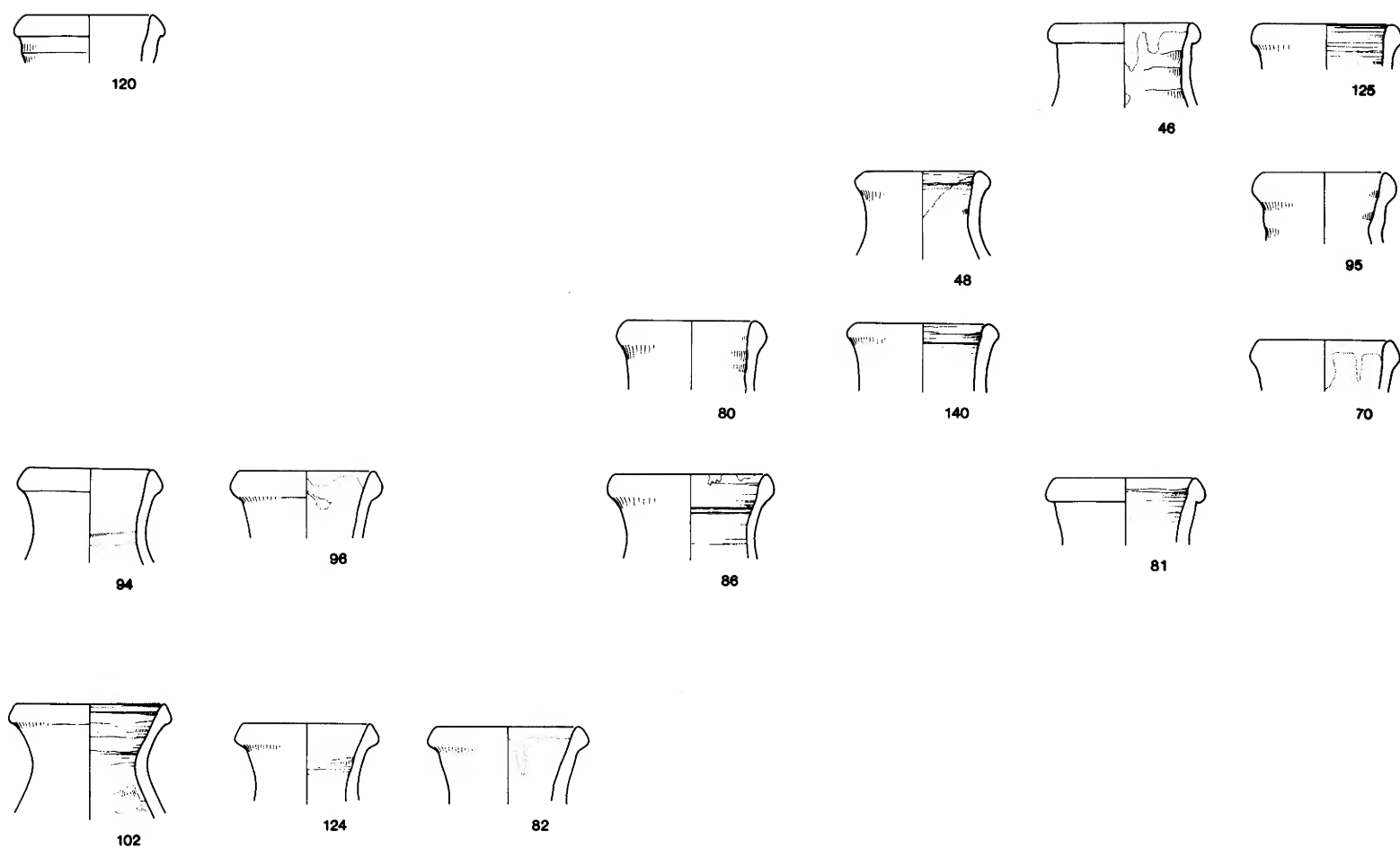


Fig. 69. Pottery: Nile clay, bottle necks. Nos. 46, 48, 70, 80-82, 86: see table 7; nos. 94-96, 102, 120, 124, 125: see pages 121-122; no. 140: see table 4. All numbers are 84/-. Scale 1:4.

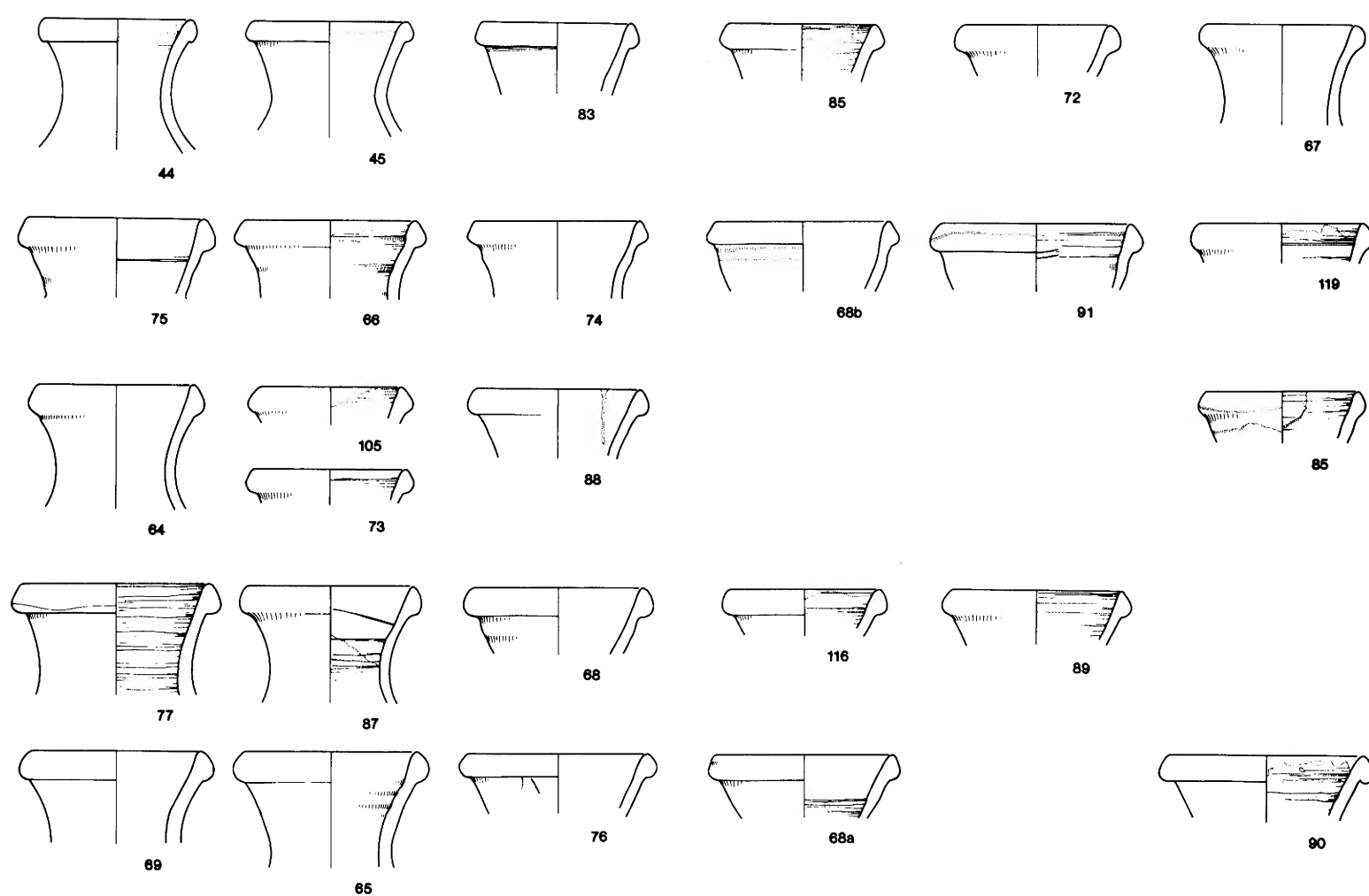


Fig. 70. Pottery: Nile clay, bottle necks. Nos. 44, 45, 64-91: see table 7; nos. 105, 116, 119: see p. 121. All numbers are 84/-. Scale 1:4.

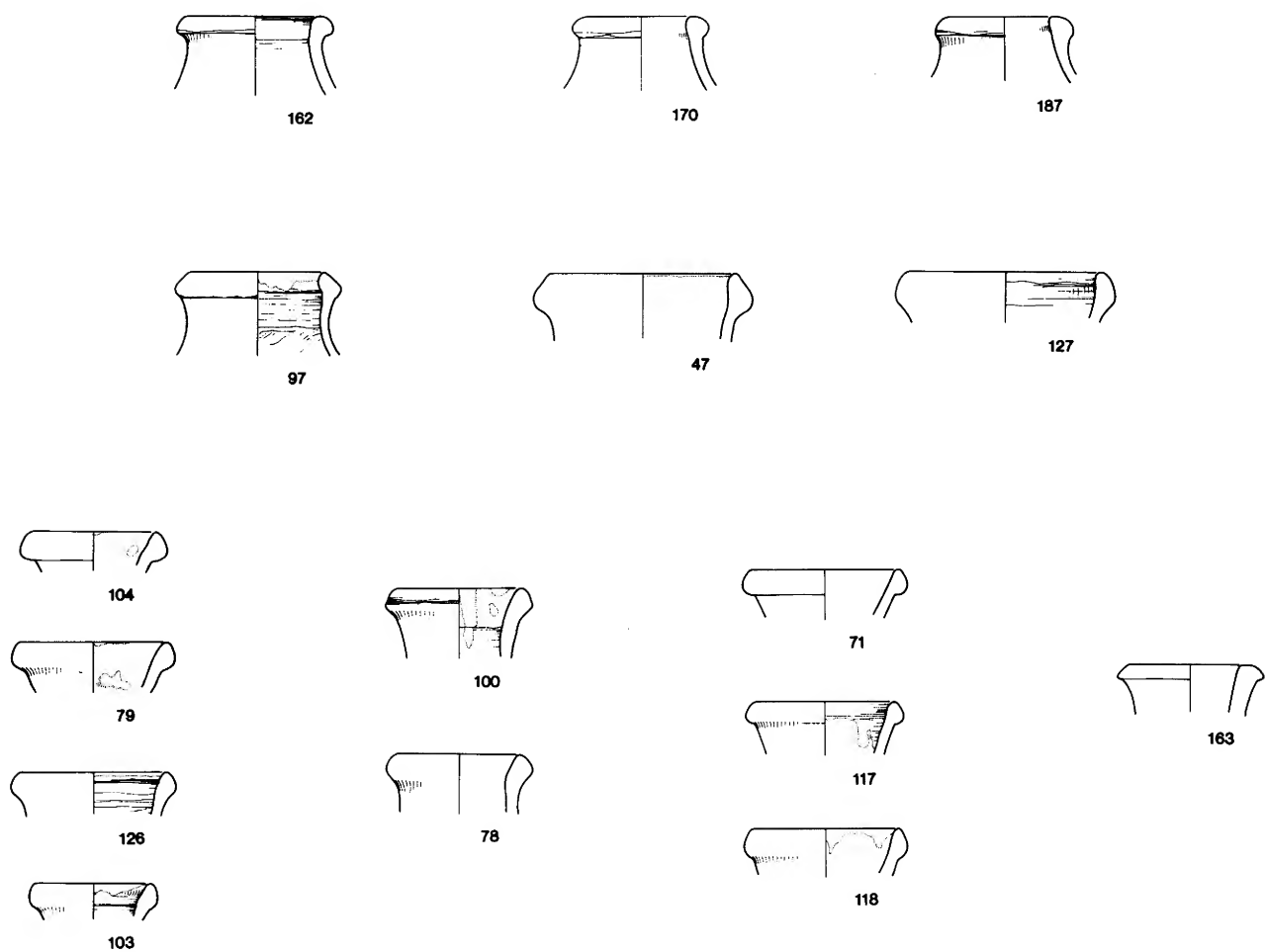


Fig. 71. Pottery: Nile clay, bottle necks. Nos. 47, 71, 78-79: see table 7; nos. 100, 103-104, 117-118, 126-127: see pages 121-122; nos. 162-163: see table 3; nos. 170, 187: see table 5. All numbers are 84/- . Scale 1:4.

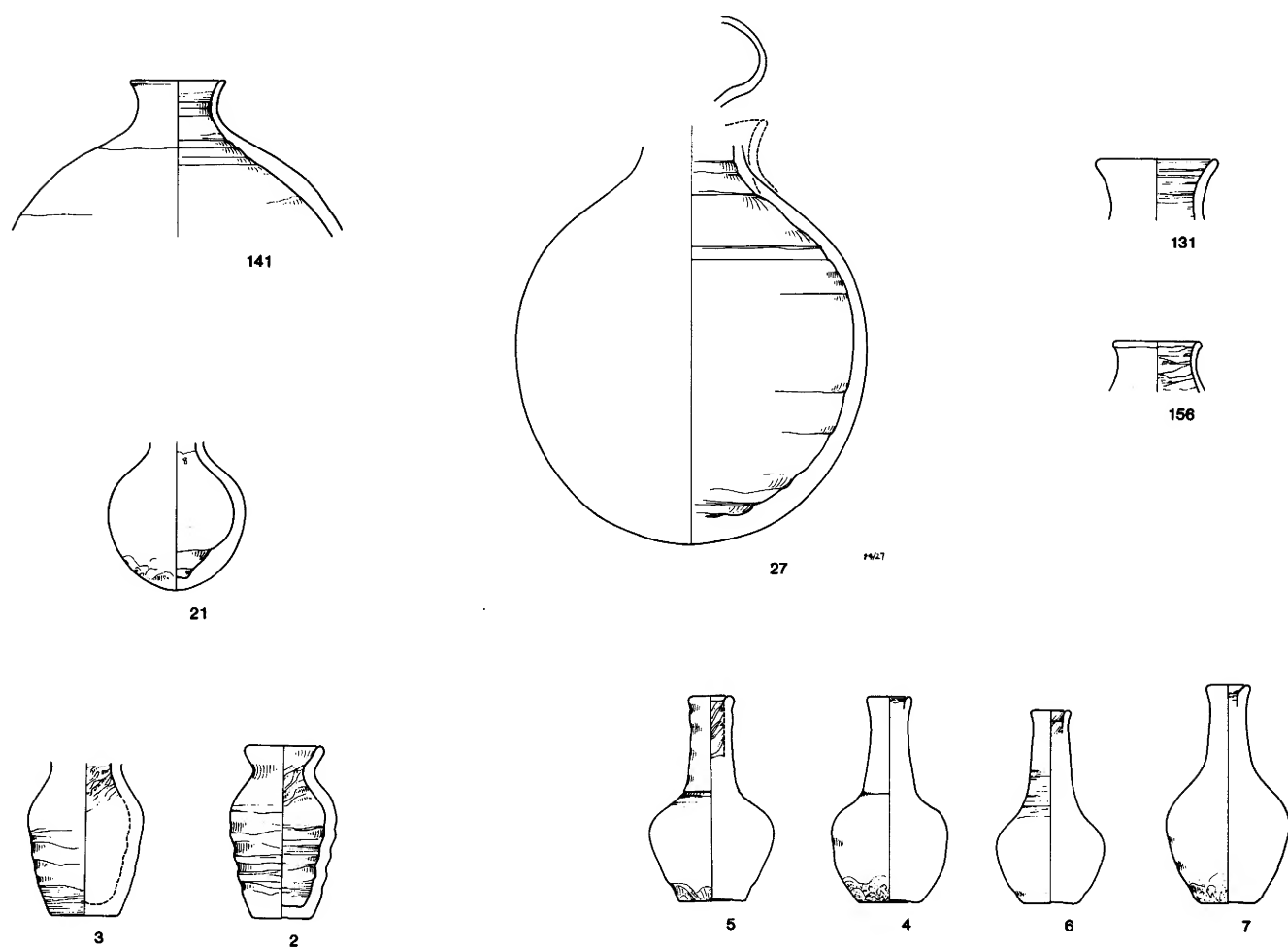


Fig. 72. Pottery: Nile clay, jars and bottles. Nos. 2-7, 21, 27: see table 2; no. 131: see table 6; no. 141: see table 5; no. 156: see table 5. All numbers are 84/- . Scale 1:4.

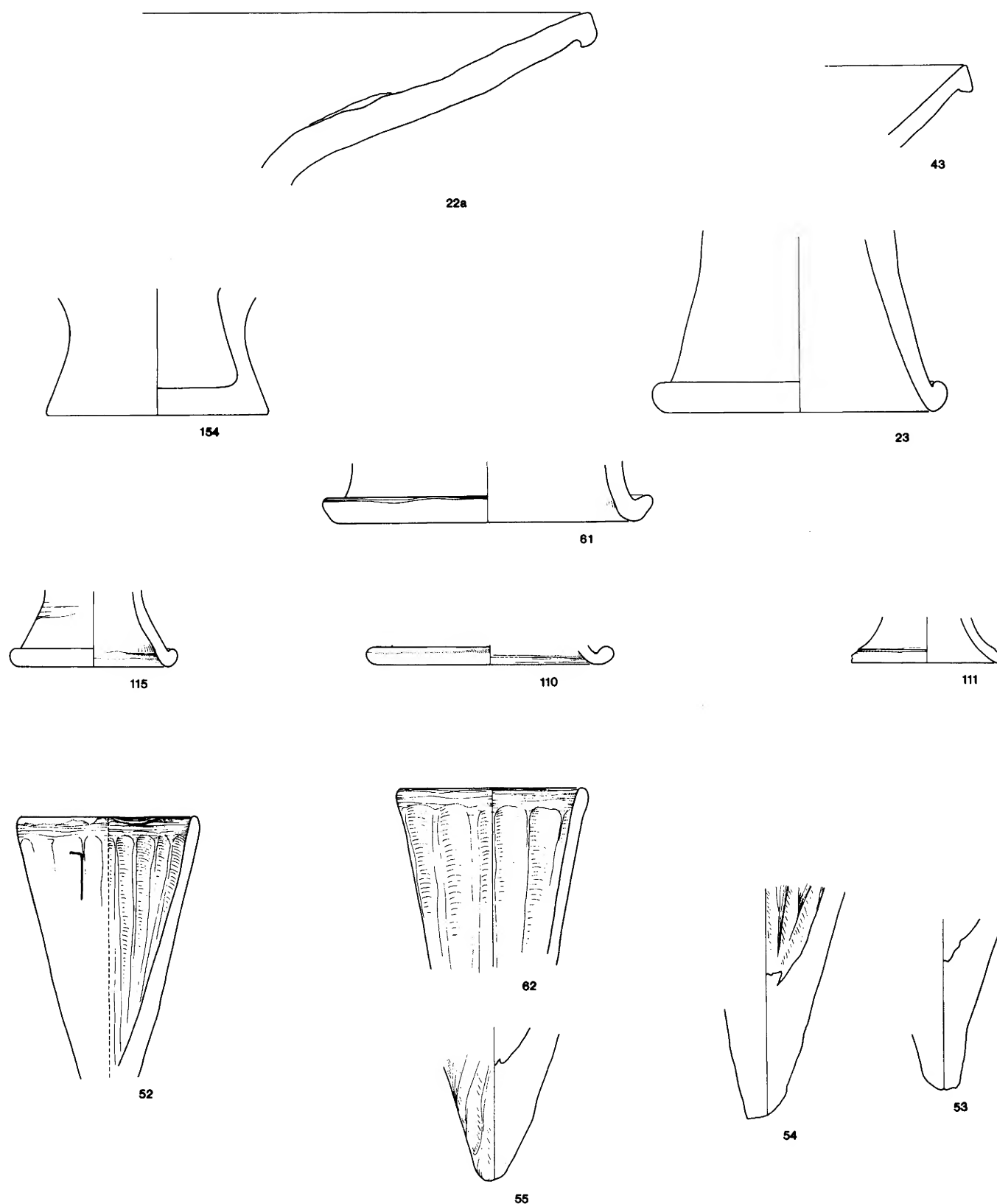


Fig. 73. Pottery: Nile clay, stands and handmade vessels. Nos. 22, 23: see table 2; nos. 43, 52–55, 61, 62: see table 7; nos. 110, 111, 115: see pages 121–122; no. 154: see table 4. All numbers are 84/-. Scale 1:4.

judge how much clay was necessary to shape the outside bottom at a later stage of the process. Evidence for this ability is most clearly provided by the hemispherical cups. These vessels must have left the wheel after the initial stage of manufacture as flat-based vessels, because they were probably cut from a “hump”—a high lump of clay, from which several pots were made in sequence.<sup>317</sup> After drying, the flat bottoms were transformed into round ones by scraping and cutting with a flat

instrument. In spite of this complex process, the potters always reached the typical hemispherical shape in the end; the vessel indices (height to width ratios) have distinct chronological value (see page 140).

<sup>317</sup> Pictorial evidence for this technique is found in Beni Hasan: Percy E. Newberry, *Beni Hasan, Archaeological Survey of Egypt*, (London, 1893) I, pl. 11; II, pl. 7.

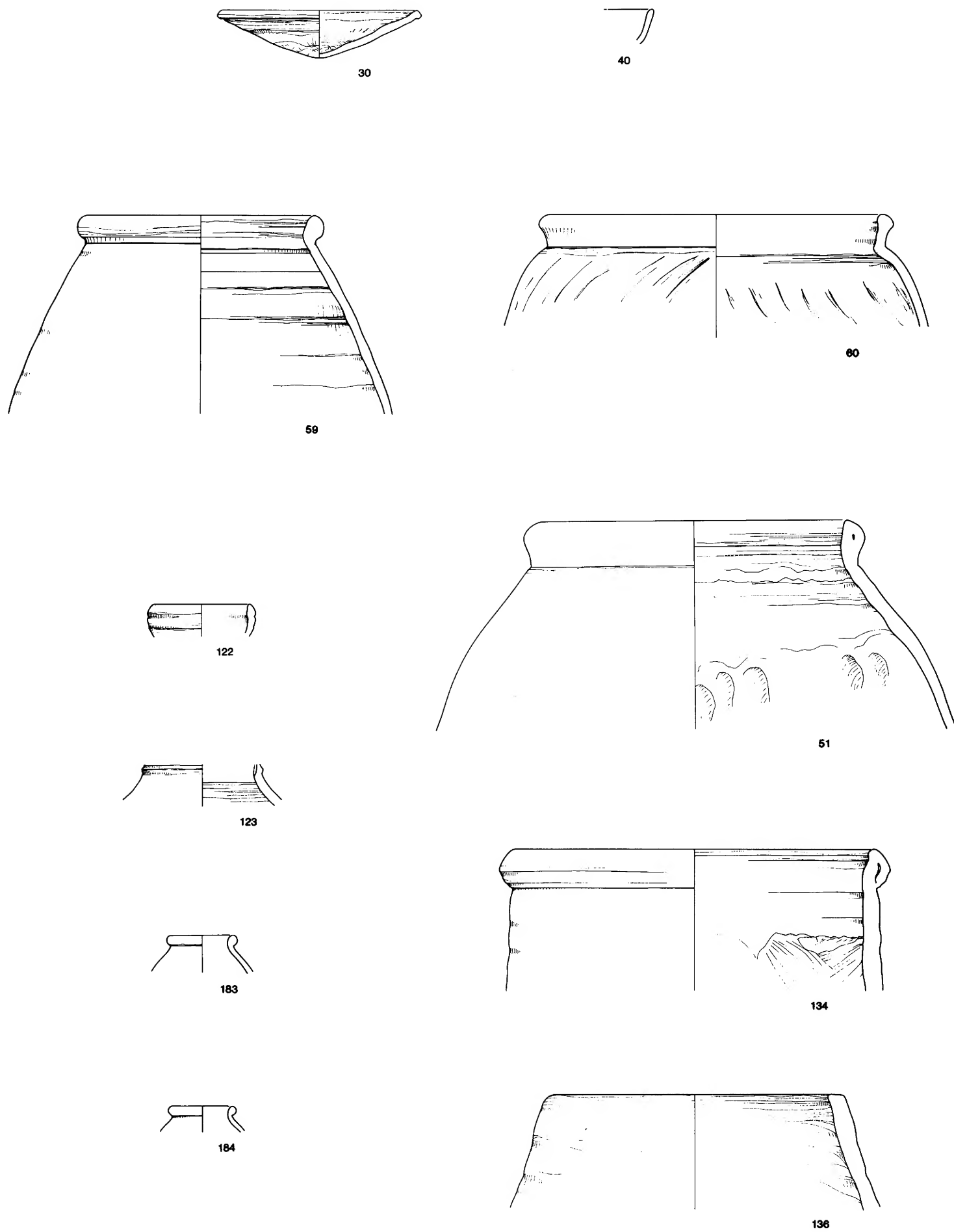


Fig. 74. Pottery: Marl clay vessels. Nos. 30, 40: see table 2; nos. 51, 59, 60: see table 7; nos. 122, 123: see page 122; nos. 135, 136: see table 6; nos. 183, 184: see table 5. All numbers are 84/- . Scale 1:4.

The large bottle 84/26 (fig. 67) carries interesting marks that indicate how it was made. Some marks are impressed fairly deeply on the inside surface just below the shoulder and on the bottom. Between these two zones is an area that only shows very shallow smoothing marks; a noticeable corner is also seen on the inside profile in this central zone.

These features suggest that the vessel was made in two major stages. The potter first made the bottom part of the bottle on the simple low-stemmed wheel. When this work was finished, the vessel looked like a large, flat-bottomed beaker. It was then put away to dry. During drying, the upper part of the “beaker” may have been held together by a rope wound around it once or twice. After drying, the vessel was again put onto the wheel, more clay was added to the uppermost rim, and the upper part of the bottle was shaped. Before narrowing the aperture to its final width, the potter smoothed the inside surface where the additional clay had been added. After a further drying stage, the vessel was inverted and the bottom made round with the help of a flat instrument. While doing this, the potter may have held the vessel on his knees.<sup>318</sup>

It is likely that this method was used because the alternative—joining the bottom to a previously-made upper part—would have resulted in the inside of the bottom part showing only marks of scraping.<sup>319</sup>

Freehand, non-radial manufacturing methods were used in the production of the conical containers (fig. 73: 84/52, 84/53, 84/54, 84/55, 84/62). Oblong bread moulds were made over a core (page 123). A combination of coiling and shaping on a turning device was used in the manufacture of the large, marl C, wide-mouthed jars and egg-shaped bottles (fig. 74). The same is probably true of the drain pipe (page 29, fig. 74).<sup>320</sup> In all these vessels, the bodies only show marks of scraping and pressing, whereas fine parallel ridges are found in the rim zone. It should be noted that in contrast, the large jar 84/59 (page 123, fig. 74), of marl clay fabric B, was wheelmade as far as it is preserved; this fact, together with the difference in fabric, suggests that the jar was made in a different workshop, and possibly also in a different region than the marl C jars.

Surface treatments were very simple. The vessels were often left plain and usually provided with a “self-slip”<sup>321</sup> which is usually only found on the parts of the surface that were given their final appearance in the first stage of the manufacturing process. Surface areas that were scraped and cut after drying were, as a rule, rough, and small grooves remain where sand particles were removed during scraping.

A red ochre wash, in most cases thickly applied, covers all parts of the vessels; this fact suggests that the wash was applied during the final stage before firing. It should be noted particularly that a great number of hemispherical cups are completely coated with red ochre. This is true above all for those found in the brick chamber, the basin and hole for the door sill, the cabin below the pavement, the drain and the lower layers of the dump east of the cabin. The hemispherical cups from the upper layers of the dump east of the cabin and those from the southeast dump are in some instances plain with a red rim (see page 121). Since this latter ware is standard for hemispherical cups during the later Twelfth and the Thirteenth Dynasty, it would appear that a development took place from mainly red-coated or wholly plain cups to cups with a red rim. Further details of the material of the hemispherical cups are given in Table 8.

3. Classification of Shapes

Figures 63–74 illustrate the pottery from the pyramid complex

of Senwosret I in a typological order which presents, under the general headings of the principal fabric classes (Nile alluvium and marl clay fabrics), a classification of the shapes of the vessels. A few remarks on the classification system used may be helpful.<sup>322</sup>

The classification is based on the three main aspects of vessel shape: proportion, structure (i.e., the fact that a vessel consists of parts) and contour. An additional aspect considered is size. All vessels are first arranged according to the proportional relation of the aperture to the maximum width. This ratio tells us whether a vessel is “open” (“unrestricted”) or “closed” (“restricted”). In open vessels, the aperture index (aperture divided by the maximum width, multiplied by 100) should be no less than 85. In most cases the aperture index of open vessels is 100; that is, the aperture is the same width as the maximum diameter.

The distinction between closed and open vessels is also important for functional reasons: open vessels display their contents, while closed vessels hide theirs. With regard to ware, it is important to notice that open vessels usually have a finish on both inside and outside, while in closed vessels only the outside surface carried a smooth finish.

In the open class there are four sub-classes; these are determined by the “vessel index,” a proportional ratio, which represents the relationship of the maximum width to the height of a vessel (see below page 140). To obtain the vessel index, the maximum diameter is divided by the height, and the result again multiplied by 100. The four sub-classes are:

- Plates vessel indices 600–350
- Bowls vessel indices 350–250
- Cups vessel indices 250–110
- Beakers vessel indices 110 and below.

In the closed class there are three sub-classes. The first two are again determined by vessel indices, while the third is determined by the presence or absence of a neck of a certain height and width. This last is a structural property. The sub-classes are:

- Tureens vessel indices 110 or above
- Jars vessel indices below 110
- Bottles jars with a neck higher than one-tenth of the overall height and narrower than one-half of the maximum diameter.

<sup>318</sup> The procedure is best documented in Roland Hampe and Friedrich Winter, *Bei Töpfern und Töpferinnen in Kreta, Messenien und Cypern* (Mainz, 1962) pl. 27.

<sup>319</sup> Bottoms of globular marl A 3 jars joined in this way are found at Thebes, for instance, in the pottery found by Institut Français d'Archéologie Orientale, Cairo at Karnak North (author's observation on unpublished material; I thank Helen Jacquet-Gordon, who showed me this pottery and with whom I had many discussions.) A Nile fabric pot with a joined bottom which shows scraping marks inside and outside is shown in Bourriau, *Umm el-Ga'ab* 53–54, no. 90.

<sup>320</sup> Do. Arnold, *MDIAK* 32 (1976) 12–18. A conclusive proof that the large marl C jars were coiled was provided by a sherd found at Dahshur. Cf. Dorothea Arnold, *Introduction to Ancient Egyptian Pottery*, forthcoming.

<sup>321</sup> The expression “self slip” is widely used. It designates the surface coating consisting of finely dissolved clay particles that results from the final smoothing of the surface by the wet hand of the potter; the water in the wetting jar always contains very fine clay particles.

<sup>322</sup> A full discussion of this classification system will be presented by Manfred Bietak and Dorothea Arnold in *Introduction to Ancient Egyptian Pottery*, forthcoming.

In addition to these proportional classes, there is a class of special shapes which are peculiar to the ancient Egyptian repertoire and usually functionally determined, although it is not always possible to state which function or group of functions is involved. In the repertoire of early Twelfth Dynasty pottery presented here, the two main “special” classes are the supports and the offering stands or burners (fig. 73).

Within the proportional and “special” classes, the shapes are arranged first according to size. There are three classes of sizes:

- Large Vessels more than 25 cm. in height or, in the case of plates, bowls, and cups, width
- Medium Vessels between 25 and 15 cm. in height or width
- Small Vessels less than 15 cm. in height or width.

After size follows structure. This aspect was already used to subdivide the class of closed vessels, to categorize the bottles; it is now used in a detailed way to subdivide the proportional classes. The vessels in each proportional class are arranged according to the shape of the bottom or base. The typology always starts with round bottoms, the most common form in the Middle Kingdom. Then follow the flat bases, ring bases, and pedestals.

Further consideration is given to the shape of the rims (simple rims are followed by profile rims, and these, by full or round rims, etc.). Finally, contour is analyzed. This criterion deals primarily with the walls of the vessel. Round walls are placed before carinated, straight necks before conical. Within these general categories, three sub-classes of body shapes are categorized by the placement of the maximum diameter:

- Shouldered the maximum diameter is above the middle of the body
- Symmetrical the maximum diameter is at or near the middle of the body
- Bag-shaped the maximum diameter is below the middle of the body.

Within these groupings, the proportion of the body again plays a role:

- Globular bodies vessel indices near 100
- Broad bodies vessel indices between 100 and 80
- Broad to slender bodies vessel indices between 80 and 60
- Slender bodies vessel indices below 60.

TABLE 8: PHYSICAL PROPERTIES OF HEMISPHERICAL CUPS

<i>Provenience</i>	<i>Number (see fig. 65)</i>	<i>Fabric</i>	<i>Surface treatment</i>	<i>Vessel index</i>
Brick chamber, lower	84/12	Nile B1	plain	216
Brick chamber, lower	84/146	Nile B1, many organic particles	red-coated	210 (?)
Brick chamber, lower	84/166	Nile B 1, many organic particles	red-coated	208
Entrance cut deposit	—	Nile B 1	red-coated	203
Brick chamber, entrance	84/138	Nile B 1, fine	red-coated	196 (?)
Brick chamber, entrance	84/137	Nile B 1	plain	203
Brick chamber, upper	84/17	Nile B 1, fine	plain	232
Brick chamber, upper	84/16	Nile B 1, fine	red-coated	210
Brick chamber, upper	84/1	Nile B 1, many organic particle	red-coated	194
Brick chamber, upper	84/41a	Nile B 1, fine	red-coated	190
Cabin, drain	84/133	Nile B 1, many organic particles	red-coated	208
Cabin, drain	84/132	Nile B 1, many organic particles	plain	190–183 (?)
Cabin, east dump, 5th sweeping	84/107	Nile B 1	red-coated	181
Cabin, east dump, 3rd sweeping	84/113	Nile B 1	plain, red rim	200(?)
Cabin, east dump, 3rd sweeping	84/112	Nile B 1	red-coated inside	177 (?)
Rectangular hole (pl. 78b, no. 6)	84/121	Nile B 1	plain, red rim	193–172 (?)
Cabin, below pavement	84/160	Nile B 1	red-coated black	192
Cabin, below pavement	84/159	Nile B 1	red-coated	175
Cabin, below pavement	84/158	Nile B 1	rim blackened	172
Southeast dump	84/42	Nile B 1	red-coated	164 (?)
Southeast dump	84/41	Nile B 1	plain, red rim	161
Southeast dump, at wall	84/93	Nile B 1	plain, red rim	155

(F.D. SW = southwest foundation deposit of the pyramid; F.D. SE = south east foundation deposit; F.D. NW = northwest foundation deposit; entr. cut = entrance cut deposit; other numbers are 84/-)

### A. Nile clay fabrics

<i>Shape</i>	<i>Lisht South</i>	<i>Sedment I</i>	<i>Lahun II</i>	<i>Riqqeh</i>	<i>Harageh</i>
large, round-bottomed plates	192, 193, entr. cut 1	—	3 M <sub>3</sub>	—	—
medium-sized, round-bottomed plates	63, 109, 190, F.D. SE 32. I. 90, 32. I. 91; F.D. NW 1	8r	2 F <sub>2</sub>	2 f <sub>2</sub>	2 F <sub>2</sub>
	191, entr. cut. 3	—	2 G <sub>10</sub>	—	—
	163a	—	—	2 f <sub>4</sub>	2 F <sub>4</sub>
small, round-bottomed plates	entr. cut 4	8n, 20m	—	—	—
	150	—	2 G <sub>11</sub>	—	—
	11, 31, 32, 151, 189	—	—	—	2 L <sub>2</sub>
	31	—	—	4 h	—
small, flat-based plates	F.D. SW 32. I. 25; -.28; -.33 F.D. SE 32. I. 69; 84 F.D. NW 3 F.D. SW 32. I. 32 F.D. SW 32. I. 39 F.D. SE 32. I. 72; 75; 79; 82 F.D. NW 36 161 entr. cut 5	9d  — thicker than: —	—  5 D <sub>5</sub> 5 D <sub>4</sub> 5 D <sub>4</sub>	—  — — —	—  — — —
small, flat-based, plates	F.D. SW 32. I. 17-.20; -.22 F.D. SE 32. I. 68; -.74; -.72 F.D. NW 30 entr. cut 6 18, 19 entr. cut 7 F.D. SW 32. I. 27; -.29; -.30, -.32; -.34; -.26; -.38; -.40; F.D. SE 32. I. 70; -.73; -.77; -.78; -.83; -.87; -.88 F.D. NW 3, 38 F.D. SE 32. I. 65; 67 F.D. NW 20 F.D. SE 32. I. 66 F.D. NW 4 15, 144, 33 148, 149	—  —  —  —  —  —  —	5 H <sub>7</sub>  5 D <sub>3</sub>  —  5 H <sub>6</sub>  5 E <sub>2</sub> — — 2 A <sub>5</sub>	—  —  2 a <sub>2</sub> (smaller)  —  —  5 l <sub>2</sub> —	—  —  2 A <sub>2</sub> (smaller)  —  5 Y <sub>2</sub> 5 L <sub>2</sub> —
medium-sized bowls, round-bottomed	34, 35, 36, 36a, 152	—	2 G <sub>9</sub>	—	—
medium-sized footed (?) bowls	164	—	3 B <sub>2</sub>	—	—
medium-sized, flat-based bowls	142, 143	—	3 R	—	—
small, flat-based bowl (or cup?)	F.D. SE 32. I. 85	—	5 H <sub>5</sub>	—	—
large cups	entr. cut 8 43 a entr. cut 9; 157, 108, 39	— 24d —	— — 7 B (?)	— — 12 r (?)	— — 12 u (?)



<i>Shape</i>	<i>Lisht South</i>	<i>Sedment I</i>	<i>Lahun II</i>	<i>Riqqeh</i>	<i>Harageh</i>
medium-sized cups of somewhat larger size	entr. cut 10; 145	16 m. (no rim)	7 A, C	—	12 s (footed, rim)
medium-sized, hemispherical cups	entr. cut 11; see fig. 65 for others	16 g, f	7j <sub>2</sub> , k, M <sub>3</sub>	7j <sub>2</sub> , j <sub>3</sub> , k	7j <sub>2</sub> , j <sub>3</sub> , k
medium-sized, footed cups	134	—	2 T <sub>3</sub>	—	—
medium-sized, round, carinated cup	42a	—	—	12 d (?)	—
medium-sized, carinated cup with pedestal foot	165	30 h	—	—	—
same, with groove	106	—	—	without groove 10 p.	10 P
small, flat-based cups	114 13 20	— — —	5 D <sub>3</sub> 5 Y <sub>3</sub> 5 P, J (footed)	— — 5 j (footed)	— 5 Y <sub>2</sub> - —
small “tureens”	9, 10	—	—	58 e	—
large, bag-shaped beaker jars	49, 50	—	—	67 p	67 P
same, with flat rim	147	—	?	?	?
same, with prof. rim	28, 130	—	67 L <sub>3</sub>	—	—
same, more even body, grooves	24	—	<i>Lahun I</i> pl. 19 no. 42 (p. 17)	—	—
same with elongated neck	153	—	—	—	—
medium-sized, bag-shaped beaker jar	168	—	67 s (not specified which of the 2 in <i>Riqqeh</i> )	67 s (left)	—
medium-sized beaker jar with more even body	29	—	as above	67 s (right)	67 s
same (?), with profile rims	185, 186	83 d	—	—	—
small beaker jar with full rim, round-bottomed or flat-based	155	—	36 M, 67D <sub>2</sub> (?)	—	—
small beaker jars, flat-based	8, 14	—	67 B7, C <sub>4-6</sub>	—	—
large and medium-sized jars, flat-based	162 187	94 c 94 b	— —	33 K <sub>2-3</sub> 33 t	— —
medium-sized, short-necked jar, flat-based (?)	129	—	—	60 d	—
small-necked, shouldered jars, flat-based	2, 3	84 W	59 Z <sub>5</sub>	59 v	—
large, round-bottomed bottles	southwall deposit 1 and 25, 26 fig. 68, nos. 1–9; 46, 48 and figs. 68–71	— —	— 40 K	— 40 g <sub>2</sub>	— —
medium-sized, globular, round-bottomed bottles	27	—	40 S <sub>2</sub>	40 s <sub>2</sub>	—
	156, 141 131	— —	— —	40 q 40 r	— 40 R
medium sized, pointed bottles	F.D. SW 32.1.7, -.8 F.D. SE 32.1.50, -.51, -.55, -.56, -.58 F.D. SW 32.1.9	54 p  52 f	smaller: 38 A <sub>3</sub>  —	—  —	—  —

<i>Shape</i>	<i>Lisht South</i>	<i>Sedment I</i>	<i>Lahun II</i>	<i>Riqqeh</i>	<i>Harageh</i>
	F.D. SE 32. I. 57	66 g	—	—	—
	F.D. NW no. 26				
	F.D. SW 32. I. 6	66 p	—	—	—
	F.D. SW 32. I. 5	89 p			
	F.D. SE 32. I. 60 for neck	49 m	—	—	—
	F.D. SW 32. I. 10				
	F.D. SE 32. I. 52, -. 53, -. 59, -. 61	89 d-e	—	—	—
	F.D. NW nos. 8, 9				
	F.D. SE 32. I. 54	54 g	—	—	—
	F.D. NW no. 34				
	F.D. SW 32. I. 8	54 p	—	—	—
small, globular bottles	21	—	38 B <sub>2</sub>	35 y (?), 35 t	—
small, flat-based bottles	4, 5, 6, 7	—	59 T <sub>5</sub>	between 48 t and 48 v, x in size	
supports: large ring stand	61	—	—	—	88 B
large, high stand	22 (?)	—	89 M	—	—
medium-sized, medium-high stand (?)	111	—	—	—	88 R
either stand or offering stand	110, 115 (?)	—	—	—	88 H or 90 C
large, offering stands, incense burners, or lamps	22a (very large), 43	—	—	90 t	90 T
	154	—	90 D (smaller)	90 d	—
	22 (?)	—	—	90 q (smaller)	—
same, medium-sized	southwall deposit 1	—	—	90 m	90 M
	110, 115 (?)	—	90 W <sub>2</sub> (?)	90 x (?)	90 X (?)
B. Marl clay fabrics					
large, wide-mouthed jars, flat-based	southwall deposit 1: 32. I. 101 102; JdE 58905, -6 southwall deposit 2: entr. cut 33. I. 166; 51 (marl B), 59	—	67 F (with handle)	67 e	67 E
large, wide-mouthed jars with short neck, round-bottomed	60	—	33 F <sub>4</sub> (smaller)	—	—
large, egg-shaped jars with conical neck, round-bottomed	122, 123	—	46 M <sub>2</sub>	—	—
small, globular jars round-bottomed, full rim	183	—	38 B <sub>2</sub> (??)	—	—

4. The Chronological Significance of Some Shapes

Hemispherical cups are the drinking cups of the First Intermediate Period and the Middle Kingdom.<sup>323</sup> In the Ninth and Tenth Dynasties, the cups invariably have a vessel index (see p. 135) above 200; some indices go up to 250, but the average is around 230. In the later Twelfth to early Thirteenth Dynasty, indices are, with few exceptions, below 200, and the average ranges from 190 to 150. In the advanced Thirteenth Dynasty, most indices lie around 120, and none is above 145.<sup>324</sup>

The drinking cups of the First Intermediate Period are also quite different in appearance from those of the advanced to late Middle Kingdom. They are of Nile B 2 material and always coated with an ochre wash on the inside; a band of about 2–3 cm. of wash occurs also on the outside, while the rest of the surface is plain. The ochre wash has a distinctive “graphite” luster. In the advanced and late Middle Kingdom, drinking cups are made from Nile clay fabric B 1, are plain, and almost always carry a tiny red stripe on the rim which is probably

made by dipping the cup mouth down into red paint.

The fact that there is a substantial difference in shape and appearance between drinking cups of the First Intermediate Period and those of the advanced and late Middle Kingdom lends special interest to the cups of the early Twelfth Dynasty. Here, if anywhere, either a gradual or an abrupt change should occur. This is one of the reasons why special attention was paid to the hemispherical cups found in the pyramid complex of Senwosret I.

The question whether the change from one kind of cup to the other was gradual or abrupt can now be settled in favor of a gradual development. The cups from the pyramid complex of Senwosret I in figure 65 (see also Table 8) were all made

<sup>323</sup> Cf. Norman de Garis Davies, *The Tomb of Antefoker* (London, 1920) pl. 11. For the First Intermediate Period, see, among many examples, the stela MMA 25.2.3 (Hayes, *Scepter I*, 141, fig. 83).

<sup>324</sup> Do. Arnold, “*Keramikbearbeitung*” 61, fig. 17.

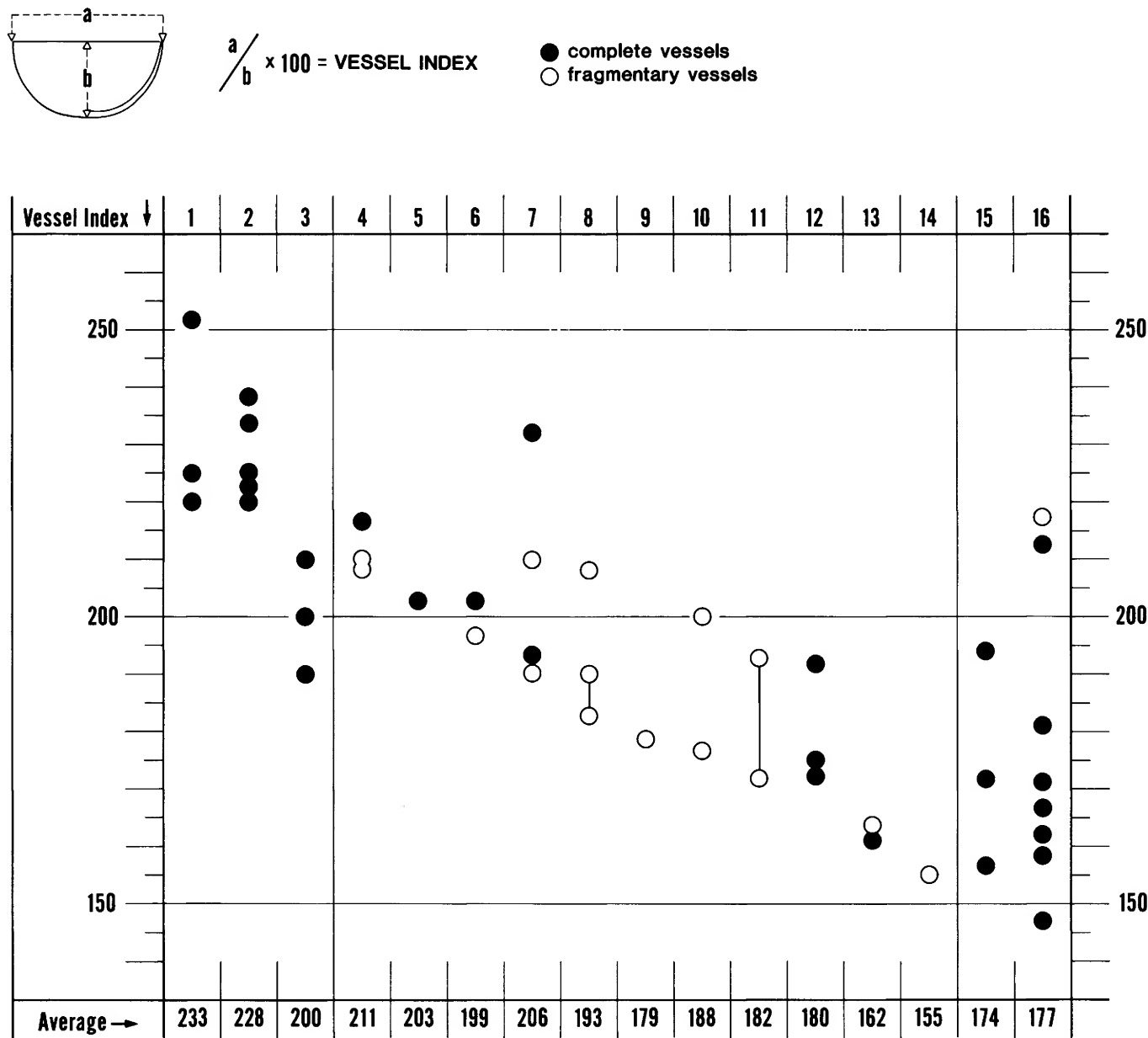


Fig. 75. Diagram showing range of vessel indices of hemispherical cups from 1: Sedment; 2: Deir Rifa; 3: Gurob; 4–14: Lisht South; 4: Brick chamber, lower; 5: entrance cut deposit; 6: Brick chamber, entrance; 7: Brick chamber, upper; 8: Cabin, drain; 9: Cabin east, 5th sweep; 10: Cabin east, 3rd sweep; 11: 84/121; 12: Below cabin pavement; 13: SE area; 14: 84/93; 15: Riqqa; 16: Dahshur. See table 8.

from Nile clay fabric B 1. As we have seen in many examples, however, the amount of organic temper is still greater than in the ordinary Nile B 1 of the advanced Twelfth and Thirteenth Dynasties. All cups found in the brick chamber and below the cabin pavement are either plain or entirely red-coated, and the red coating is invariably matt, thus not conforming in surface treatment to either of the other periods. Only in the groups from the upper layers of the dump east of the cabin and the southeast dump do there occur the plain cups with red rims so typical of the later Middle Kingdom.

The cups from the pyramid complex of Senwosret I thus take a clearly intermediary position with respect to clay material and surface treatment. The shape of the cups can best be studied by comparing the vessel indices. The ratio of the maximum width to the height, called the "vessel index" since H. A. Nordström introduced the term into Egyptology,<sup>325</sup> is especially diagnostic in the simplest shapes. In previous studies of the vessel indices of drinking cups found in the pyramid complex of Amenemhat III at Dahshur,<sup>326</sup> we were able to demonstrate that there is a definite chronological significance in the lowest index occurring in any group of cups from a single context. Thus all the cups at Dahshur, which were late Twelfth to early Thirteenth Dynasty in date, had indices not lower than 145. The advanced Thirteenth Dynasty cups, on the other hand, had indices as low as 116. The highest index in each group also varies: the average highest index of the Twelfth to early Thirteenth Dynasty is around 190, while the highest index in the advanced Thirteenth Dynasty is around 140.

A similar study of the hemispherical cups here studied shows (fig. 75) that no cup has a vessel index below 155. In fact there is only one piece (84/93) with an index below 160, and it comes from a context that is probably later than all the other groups (see page 124). Figure 76 shows further that only the cups found in the southeast dump have indices lower than 170. If the groups are arranged according to their index—as in figure 75—a sequence can be established with continuously diminishing lowest indices.

It must be understood that a placement in the sequence shown in figure 75 is reliable only if at least two, and preferably three, cups are available in one group. According to their positions, the groups "brick chamber, basin, lower level," "brick chamber, basin, upper levels," and "cabin, below pavement" have a reasonable chance of being chronologically significant. The position of groups such as "entrance cut deposit" or "cabin east, fifth sweep" suggest a possible order, but cannot be depended on.

Since, as we have seen, the physical properties of the cups develop in a chronologically significant sequence, this sequence can serve to correct the position of groups which are debatable due to the low number of pieces. Thus, for instance, the physical properties would place the cabin east dump closer to the end of the sequence than indicated in figure 75 by the presence of cups of plain ware with red rims. The absence of a cup of this ware from the group "cabin, below pavement" also suggests that this group should be placed before rather than after the group "cabin, east dump, third sweep" (see also Table 8).

In order to gain a broader basis for the chronology of the pottery groups from Lisht South, types other than hemispherical cups must be considered. One of the most frequent types of the Middle Kingdom repertoire is the large, Nile clay C bottle with round bottom, to which Engelbach<sup>327</sup> gave the numbers 40 and 41 (fig. 67). Since most bottles of this type are found broken, it seemed advisable to focus on a detail of shape

rather than on the whole shape. The necks offered the greatest opportunity to observe differences. An attempt was therefore made to isolate features of the shape of the bottle necks that could prove to be chronologically significant. Figure 76 presents the result of this study; figures 68 to 71 show the individual sherds used.

The features examined in the analysis of the neck shape of large bottles were: the width of the aperture (b in fig. 76); the narrowest width of the neck (a); and the distance between the narrowest point of the neck and the aperture (c). The width of the aperture was measured between the two points where the horizontal orifice plane meets the inner curve of the rim diameter; in this way, the shape and thickness of the rims do not confuse the issue. Rim shapes should be studied separately.

The relationship between the three distances a, b, and c was determined in such a way that  $a/b \times 100$  was taken as one unit. This is, in fact, the aperture index (see above, page 135). This index was plotted along the horizontal axis of the coordinate system in figure 76. The height of the neck between the minimum diameter and the aperture was plotted along the vertical axis of the same diagram. According to this arrangement, a perfectly straight neck would find its place on a vertical line through the 100-mark on the horizontal axis. All necks which narrow towards the top are placed to the right of this line; all those with a conical shape are to the left of it. A minimum diameter that lies high near the orifice plane will place that piece near the lower end of the diagram, while a bottle with a neck that extends high above the narrowest width is placed high on the diagram.

The first point one notices when looking at figure 76, where all sufficiently preserved necks from the Lisht South pyramid complex, in addition to some dated groups, are plotted, is that the necks form distinctive clusters. There are three main clusters. The first lies entirely to the right of the 100-line and below the height of 3 cm.; this means that all the necks in this cluster narrow towards the top and their minimum diameter is fairly close to the top. The second cluster lies between 85 and 100 in the aperture indices and between 3 and 4 cm. in height. The third cluster is between 70 and 85 in the aperture indices and between 3.5 and 6 cm. in height. Beyond the third cluster is a fourth group, not covered by Lisht South pyramid complex examples, which overlaps somewhat with cluster 3 in height and with clusters 2 and 3 in aperture indices. Cluster 4, however, considerably exceeds cluster 3 in height, reaching up to 8 cm. and more. Cluster 4 is mainly formed by examples from the pyramid complex of Amenemhat III at Dahshur.

<sup>325</sup> Hans-Åke Nordström, *Neolithic and A-Group Sites* (The Scandinavian Joint Expedition to Sudanese Nubia Publications, 3: 1; Lund, 1972), 71–72.

<sup>326</sup> Do. Arnold, "Keramikbearbeitung" 60–62. The study was subsequently continued by Manfred Bietak, *AJA* 88 (1984) 480–481, II. 2.

<sup>327</sup> The pottery repertoire of the Middle Kingdom has hitherto been available mainly in the corpus established by Reginald Engelbach and augmented by Brunton: Engelbach, *Riqqeh*, pls. 28–33; Engelbach, *Harageh* pls. 34–41; Brunton in Petrie, *Lahun II* pls. 55–53.

or stratum occurs in all clusters, or spreads over non-adjointing clusters.

**Diagram:** A cross-section of a neck profile with dimensions labeled:  $b$  (top width),  $c$  (height of neck), and  $a$  (bottom width).

**Formula:**  $\frac{a}{b} \times 100 = \text{APERTURE INDEX}$

**Legend:**

- brick chamber, entrance
- ☆ brick chamber, basin, upper layers
- \* at wavy wall
- ▲ cabin, below pavement
- ⊙ cabin, east dump, 7th sweep
- cabin, east dump, 2nd and 3rd sweep
- △ cabin, drain
- southeast dump
- ★ Dahshur, Amenemhat III
- Riqqa, Haraga, Lahun
- ⊙ southwall deposit 1

**Scatter Plot:**

**Y-axis:** Height of Neck ↓ (metres), ranging from 0.01 to 0.08.

**X-axis:** Aperture Index →, ranging from 50 to 130.

**Data Points (Approximate Coordinates):**

Feature Type	Aperture Index	Height of Neck (metres)
brick chamber, entrance	41 D, 41 B, 41 K, 40 K, 41 G2, 141	0.065, 0.065, 0.055, 0.030, 0.030, 0.012
brick chamber, basin, upper layers	10, 9, 11, 4, 1, 2, 3, 7, 5, 13, 12, 16, 15, 14, 8	0.080, 0.075, 0.072, 0.063, 0.059, 0.057, 0.055, 0.052, 0.050, 0.048, 0.058, 0.068, 0.067, 0.066, 0.065
at wavy wall	128, 126	0.020, 0.018
cabin, below pavement	181, 176, 175, 174, 173, 182, 180, 178, 156, 170, 131, 171, 25	0.025, 0.024, 0.023, 0.022, 0.021, 0.020, 0.019, 0.018, 0.017, 0.016, 0.022, 0.020, 0.019
cabin, east dump, 7th sweep	98, 99	0.022, 0.025
cabin, east dump, 2nd and 3rd sweep	101, 92, 94, 86, 48, 46, 102, 124, 87, 69, 62, 77, 67, 45, 44, 75, 82	0.035, 0.022, 0.038, 0.038, 0.034, 0.030, 0.030, 0.038, 0.038, 0.055, 0.055, 0.052, 0.052, 0.048, 0.045, 0.044, 0.046, 0.043
cabin, drain	175, 174, 173, 182, 180, 178, 156, 170, 131, 171, 25	0.020, 0.019, 0.018, 0.017, 0.016, 0.015, 0.014, 0.013, 0.012, 0.011, 0.010
southeast dump	87, 69, 62, 77, 67, 45, 44, 75, 82	0.055, 0.055, 0.052, 0.052, 0.048, 0.045, 0.044, 0.046, 0.043
Dahshur, Amenemhat III	10, 9, 11, 4, 1, 2, 3, 7, 5, 13, 12, 16, 15, 14, 8	0.080, 0.075, 0.072, 0.063, 0.059, 0.057, 0.055, 0.052, 0.050, 0.048, 0.058, 0.068, 0.067, 0.066, 0.065
Riqqa, Haraga, Lahun	41 D, 41 B, 41 K, 40 K, 41 G2	0.065, 0.065, 0.055, 0.030, 0.030
southwall deposit 1	128, 126	0.020, 0.018

Fig. 76. Diagram showing relationship of aperture index to height of neck in necks of bottles of the Twelfth Dynasty. See figs. 68–71.

posit 1, the cabin drain (84/131), the brick chamber, basin, upper levels (84/25, 26), the layer below the cabin pavement (84/170–182), the cabin east dump, seventh sweep, ashy layer (84/98, 99), and the wavy wall (84/128).

Cluster 1 shares with cluster 2 necks from the brick chamber entrance (84/140, 141) and the cabin, east, rectangular hole (84/167, 92, 94, 95).

Cluster 2 contains no group exclusively. It shares with cluster 3 the large group of necks from the southeast dump (84/46, 48, 81, 86 are in cluster 2).

Number 84/102 from the second sweep of the cabin, east dump and 84/124 from the rectangular hole lie between cluster 2 and 3.

Cluster 3 consists mainly of southeast dump pieces (84/44, 45, 62, 65, 67, 69, 77, 82). In addition, the first pieces from the Amenemhat III group appear, of which cluster 4 mainly consists.

In addition, some variants of Engelbach's 40 and 41 family have been plotted. Type 41 G<sub>2</sub>—a rather frequent type at Riqqa—lies between clusters 1 and 2. Type 40 K from Lahun is in cluster 2. Type variant 41 K, which is the most frequently found large bottle at Haraga and Riqqa, is placed between clusters 3 to 4, while 41 B and D (O at Riqqa) lie far outside cluster 4.<sup>328</sup>

The chronological significance of the clusters and their sequence is unmistakable. Cluster 1 starts at the very right of the diagram with a neck that is (south wall deposit 1) surely of the time of Senwosret I (see page 113). Significantly, cluster 1 contains no Riqqa or Haraga types. The first Riqqa type appears between clusters 1 and 2 (41 G<sub>2</sub>), and the type which was found exclusively at Lahun, not at Riqqa or Haraga (40 K), appears in cluster 2. It thus seems that only with bottles of cluster 2 does one reach the time of Senwosret II: the cemetery of Riqqa began approximately during the reign of Amenemhat II,<sup>329</sup> while it is not probable that any burials were deposited at the site of the pyramid of Illahun before the time of Senwosret II.

At the other end of the diagram, cluster 4 contains the bottle necks of the end of the Twelfth Dynasty to the beginning of the Thirteenth.<sup>330</sup> Cluster 3, then, which forms the link between clusters 2 and 4, should also be the chronological link between roughly the time of Senwosret II and the end of the Twelfth Dynasty.

Considering the history of the events around the Lisht South pyramid, it seems logical to assume that the accumulation of dumps east of the cabin occurred mainly in the generation or two after the death of Senwosret I. The stratification of these dumps is clearly mirrored by the clustering of the necks. In cluster 1 are two necks (84/98, 99) which were found in the lowest, ashy layer of the dump (see page 90), while in cluster 2 and in the parts of cluster 1 closest to cluster 2 appear the necks from the rectangular sewage hole (84/167, 92, 94, 95) and the upper layers of the dump east of the cabin (84/101, 102 from the 2nd and 3rd sweeps).

Comparison of the clusters with the results of the analysis of the hemispherical cups reveals that both studies put the following groups at the head of the series: southwall deposit 1 and "entrance cut" deposit; brick chamber basin, upper and lower levels; cabin, below pavement and cabin east, ashy layer. According to the sequence of cups as well as that of the bottle necks, the pottery from the rectangular hole and the upper layers of the dump east of the cabin is clearly somewhat removed from these first groups. In both cases, the southeast dump forms the link with the Amenemhat III pieces.

With all due caution, we therefore assign the following dates to the pottery groups presented here:

Foundation deposits of South Pyramid	}	early years of Senwosret I
"Entrance cut" deposit		
Southwall deposit 1	}	later years of Senwosret I
Brick Chamber, basin, lower and upper levels		
Cabin, below pavement		
Cabin, east dump, ashy layer		
Cabin, drain		
Brick chamber, entrance hole	}	Amenemhat II to Senwosret II
Cabin, rectangular hole and heap above		
Cabin, east dump, upper layers		
Southeast dump	}	Senwosret III to early Amenemhat III

## 5. The Position of the Pottery from the Pyramid Complex of Senwosret I at Lisht South in the History of Middle Kingdom Ceramics

The foregoing results enable us to draw some conclusions on the course of ceramic development in the region of Lisht during the first half of the Twelfth Dynasty. The story opens with pots from the foundation deposits of the pyramid (figs. 52–54). Lansing, in first publishing some of these pots, noted<sup>331</sup> that they were of a shape "common in the Old Kingdom but entirely out of fashion in the Twelfth Dynasty." In fact the shape of the jars from the foundation deposits is typical not so much of the Old Kingdom as of the First Intermediate Period. Accordingly,

<sup>328</sup> It is not possible here to undertake a detailed discussion of the grave sequence at Riqqa and Haraga. In Riqqa cemetery A (Engelbach, *Riqqeh*, pl. 47), the bottles occur in a clearly visible horizontal stratigraphy. The medium-sized globular bottles of family 40 occur in tombs 10, 17, 18, 145, 133, 70, 156, 168, 158, 144 which are situated either in the south or northeast of the center of the cemetery. None of these tombs lies in the northwest corner of the cemetery. Type 41 G<sub>2</sub> occurs in the south and in some tombs in the northeast. In the south are 24, 101, 132, 20, 151, 71; in the northeast 116, 163, 153. Again, no tomb in the northwest yielded this type. Type 41 K, in contrast, occurs not only in the south (tombs 80, 14, 26, 5) and in the center at the outskirts (127 in the west, 173, 513, 180 in the east), but also in the northwest of the cemetery (tombs 122, 150). Thus a sequence of family 40 and 41 G<sub>2</sub> followed by 41 K seems to be established. It should be noted that tomb 124, in which jewelry with the names of Senwosret II and Senwosret III (Engelbach, *Riqqeh* 11–13, pl. 1) was found, is situated in the west center, thus indicating that the extension of the cemetery towards the northwest with type 41 K belongs in the second half of the Twelfth Dynasty. For type 40 K (Petrie, *Lahun* II, pl. 56) terminus post quem is established by the fact that one can reasonably exclude the existence of tombs at Illahun before the reign of Senwosret II. Tomb 653 (Petrie, *Lahun* II, pl. 48) also contained 33 F<sub>2</sub>, which at Riqqa A occurs in tomb 505 in the west center.

<sup>329</sup> For a detailed discussion of the beginning of the cemeteries of Riqqa and Haraga, see Kemp and Merrillees, *Minoan Pottery* 39–54. In the horizontal stratigraphy of cemetery A at Riqqa, it should be noted that boats or figures from boats were found in tombs 123 and 181 in the center and east center. Also attested in the east center are types 38 Y (tombs 146, 168) and 33 L (tombs 152, 168), which are definitely early Twelfth Dynasty types. It thus appears that the cemetery began in the east center; only later were the south and then the west center included in the burial ground. In the west center was found tomb 124 containing jewelry from the times of Senwosret II and Senwosret III. It is thus reasonable to assume that the cemetery came into use at least a generation before Senwosret III, i.e., during the later years of Amenemhat II or the time of Senwosret II at the latest, if one does not accept a shortened chronology: cf. W. K. Simpson, *LÄ V* 900, 903, s.v. "Sesostris."

<sup>330</sup> Dorothea Arnold, "Keramikbearbeitung" 38–42 with fig. 7 on page 31, discusses the date of these necks.

<sup>331</sup> *BMAA* 28, April 1933, II, 11.

the "old fashion" need not be ascribed so much to the ritual character of the pots as to the fact that during the time of their manufacture, the prevailing pottery style was still closely connected—or indeed identical—with that of the First Intermediate Period.

It is not possible to discuss here the duration of First Intermediate Period pottery style, but the following facts should be emphasized in order to clarify the significance of the ceramic evidence from Lisht South. The first point to be stressed is that the ceramic history of the Memphite and Lisht region cannot be solved by comparison with the pottery found at Beni Hasan in northern Middle Egypt.<sup>332</sup> Such comparisons should be avoided all the more since it can be shown in various instances that Middle Egyptian pottery workshops held on to First Intermediate Period types longer than the rest of the country.<sup>333</sup> Comparisons with Upper Egypt are in any event out of the question; in ceramic matters that region went its own way during the period under discussion.<sup>334</sup> There remain the sites of the Memphite region and the entrance to the Fayum in the immediate neighborhood of Lisht. Here it is primarily in the cemeteries of Sedment, Gurob and Haraga that pottery of the First Intermediate Period style and the beginning of the new style of the Twelfth Dynasty was found.

The most important evidence for the question of the end of the First Intermediate Period pottery style in the region of Memphis and the entrance to the Fayum is furnished by the graves of cemetery N at Sedment.<sup>335</sup> In this small burial area, horizontal stratigraphy clearly separates two clusters of graves with typical First Intermediate Period pottery from third cluster which shows pottery of a distinctly different variety. The two clusters with true First Intermediate Period pottery are situated to the left and the lower center of the plan published by Petrie and Brunton without indication of north.<sup>336</sup> The pots found in the graves forming these two clusters are of the same repertoire and style as those found in the large cemetery G at Sedment, which, by the evidence of seals,<sup>337</sup> amulets,<sup>338</sup> and pots found together with coffins and wooden models in cemetery 2100 at Sedment, are to be dated to Dynasties Nine-Ten, and Eleven.<sup>339</sup>

The pottery found in the graves which form another cluster in the upper center of the plan of cemetery N as well as that found in the graves at the outskirts of the same plan is distinctly different in style.<sup>340</sup> The proportions of the vessels—whether open or closed—are noticeably more balanced in this group. True, the jars with conical necks—the leading shape of the First Intermediate Period—do reappear in this group, but they show less pronounced shoulders, bodies that are almost evenly oval in contour, and necks that are either rudimentary or higher than those of the First Intermediate Period.<sup>341</sup> In short, pottery appears here which, in using the basic types of the First Intermediate Period, shows at the same time a new stylistic approach to the old shapes. It is also remarkable that in the same group, a marl clay fabric appears which is close to, if not identical with, marl C.<sup>342</sup> Taking all the evidence together, it seems clear that the people furnishing the upper center graves in Sedment cemetery N drew on a new source for the pottery they placed in the graves.

Unfortunately, the upper center grave cluster in cemetery N is deficient in non-ceramic material which could help date them absolutely. But the same pottery that was just described as a variation of the First Intermediate Period types was also found in some graves of cemetery 2100 at Sedment in connection with coffins. A good example is grave 2101. Here two pots of the new style were found with a coffin which, by the palaeographic

rules worked out by Wolfgang Schenkel, should date from the end of the Eleventh to the early Twelfth Dynasty.<sup>343</sup> This statement does not help much in answering the question of when the new style was first adopted, because a number of coffins with the same palaeographic characteristics were found with

<sup>332</sup> The pottery from the hillside tombs of Beni Hasan (Garstang, *Burial Customs* pls. 10–16) was used by Kemp to determine the beginning of the pottery style represented by the Riqqa-Haraga-Lahun corpus: Kemp and Merrillees, *Minoan Pottery* 50–54.

<sup>333</sup> A notable example is the jar found in the burial chamber of Nakhty at Assiut: Emile Chassinat and Charles Palanque, "Un campagne de fouilles dans la nécropole d'Assiout," *MIFAO* 24 (1911) 52. Christiane Desroches Noblecourt et al. *Une siècle de fouilles françaises en Égypte 1880–1980, à l'occasion du Centenaire de l'École du Caire (IFAO)* (Cairo and Paris, 1981) 133, no. 132. There can be little doubt about the early Twelfth Dynasty date of this burial but the jar is most certainly of a First Intermediate Period style. Cf. Do. Arnold, *MDIK* 28 (1972) 39, fig. 3 left, and pl. 12b; or W. M. Flinders Petrie, *Qurneh* [The British School of Archaeology in Egypt Fifteenth Year, London, 1909] pl. 18, esp. no. 456.

<sup>334</sup> Cf., for instance, the pottery published by E. Edel in Kemp and Merrillees, *Minoan Pottery* 179–212, figs. 62–68.

<sup>335</sup> Petrie and Brunton, *Sedment* I pl. 24 A, upper right corner.

<sup>336</sup> On the left side are graves 643 (with pot types 78t, 86t), 662 (types 64m, 83d), 716 (pot type 52r of *Sedment* I pl. 31), and 717 (types 62c, 63 m, 80). In the lower center are graves 709 (types 53c, 54h), 711 (types 86q, 89r), 725 (types 8n, 36r, 64l, 66o, 67c, 88p), and 732 (types 64d, 66j). All the pottery types are clearly of the First Intermediate Period and also occur in cemetery G.

<sup>337</sup> Petrie and Brunton, *Sedment* II pl. 57, nos. 1–4. William A. Ward, *Studies on Scarab Seals 1: Pre-Twelfth Dynasty Scarab Amulets* (Warminster, 1978) pl. 6 no. 172; pl. 10 nos. 261, 161; pl. 12 no. 309. Ward puts all examples into his period 3, which he dates to the time from about the middle of Dynasty 9/10 to the end of Dynasty 11. Cf. op. cit. 15–18. It should be observed, of course, that the dates for these seals are in part determined by using ceramic parallels dated by Brunton in his study of the finds of Qau, Matmar and Mostagedda etc. (cf. Ward, op. cit. 15 and passim).

<sup>338</sup> Most important is the group found in grave 1680: Petrie and Brunton *Sedment* I, pl. 12 lower half. Compare to this group Guy Brunton, *Matmar. British Museum Expedition to Middle Egypt 1929–1931* (London, 1948) pl. 41, group 306. For the small seal amulet in Sedment grave 1680 compare Ward, op. cit. pl. 3 nos. 64–68 (Ward period 2).

<sup>339</sup> Most evidence for cemetery 2100 is for a late Dynasty 11 to early Dynasty 12 date. Models: Petrie and Brunton, *Sedment* I, pl. 20 and 26. Compare Dieter Arnold, *Der Tempel des Königs Mentuhotep von Deir el-Bahari III. Die königlichen Beigaben* (AV 23. Mainz, 1981) pls. 11–23. Coffins: Petrie and Brunton, *Sedment* I pls. 18, 19, 19A, 19B, 23–28. For the dating of these coffins Wolfgang Schenkel, *Frühmittelägyptische Studien* (Bonner Orientalistische Studien, Neue Serie Band 13. Bonn, 1962) 30–31 provides the evidence from the writing of *ntr* '3. According to Schenkel the horizontal position of '3 on long sides of the coffin pls. 18–19 (the short sides show a vertical '3 sign!) would date this piece to the time of the end of the Eleventh Dynasty or later. The coffin from grave 2127 (Petrie and Brunton, *Sedment* I pl. 25) shows only the vertical '3 and could therefore be earlier. But the palaeography of the determination of *wt* would date this coffin as well as others into the late Eleventh to early Twelfth Dynasty. Cf. Schenkel, op. cit. 40–41 and Petrie and Brunton, *Sedment* I, pls. 18, 23 upper middle, 24 and 25.

<sup>340</sup> In the upper center are graves 997 (pot types 66t, 74n), 998 (type 9d, k, 16g, 21v, 22d, 23n, 36c, 38a, 66k, 89p), 1002 (types 63k, 64u, 76u, 89p), 1003 (types 63k, 74m, 76u), 1006 (types 16e, 89p), 1008 (types 36q, 63k), and 1010 (types 63k, 89p). In the outskirts, at top right of the plan Petrie and Brunton, *Sedment* I pl. 24A, are graves 1024 (types 63k, 90p), 1027 (types 86p, 90k), and 1028 (types 66h, 90p). In the lower region on the extreme right, are graves 1004 (types 16g, 36c, 66h, 90q) and 1030 (types 66m, 94b).

<sup>341</sup> Petrie and Brunton, *Sedment* I pl. 32 no. 63k, 64u; pl. 33 no. 66h, 66m, n, t, 74m, n; pl. 35 no. 89p, 94b in the closed shapes; pl. 29 no. 16g in the open shapes.

<sup>342</sup> Petrie and Brunton, *Sedment* I pl. 33 nos. 66m and 74m, n are of marl clay. Thanks to the courtesy of the keepers of the Petrie Museum at the University College, London, the author could study the pots from Sedment in this museum and determine their fabrics. The material of the above listed marl clay pots is of a consistency very similar to marl C. The colors are either reddish brown or light gray.

<sup>343</sup> The types found in grave 2101 are Petrie and Brunton, *Sedment* I pl. 29 no. 16f and pl. 32 no. 63k. The coffin is depicted op. cit. pl. 23 bottom. The inscriptions show the determination of *wt* that lasted, according to Schenkel (see above note 339) into the Twelfth Dynasty. But there is also an vertical '3 sign in *ntr* '3.



pottery of typical First Intermediate Period style.<sup>344</sup> However, the fact that coffin 2101 does belong to a group no later in date than the early Twelfth Dynasty indicates that the change in ceramic style seen in the graves in the upper center and on the outskirts of cemetery N at Sedment falls into this early period, and is not a development of the advanced Twelfth Dynasty.

Another cemetery of the same region around the entrance to the Fayum, cemetery E at Gurob, corroborates the evidence of Sedment. Here, pottery of the style noted in graves in the upper center and outskirts of Sedment N<sup>345</sup> was found together with seals very similar to those discovered at Sedment.<sup>346</sup>

We now turn back to the pottery from Lisht South and ask how it fits to the picture just outlined. Clearly, the earliest pots in the group presented here—the pots from the pyramid foundation deposits (figs. 52–54)—should be examined first. A comparison of these pots with those from Sedment and Gurob shows that most of the foundation deposit pots still conform to the repertoire of the true First Intermediate Period types. Figure 52 no. 11 or fig. 53 nos. 12, 13, for instance, are very close to type 54p of the Sedment corpus.<sup>347</sup> Figure 52 no. 10 is close to Sedment type 89e, and fig. 52, no. 12 to Sedment type 62f.<sup>348</sup> All these types in the Sedment corpus belong to the First Intermediate Period style and do not appear in the graves of the upper center and outskirts of cemetery N at Sedment. It is true that in some pots of the foundation deposits the necks have the rudimentary character (fig. 52, nos. 9, 10, fig. 53, nos. 9, 10 and fig. 54, nos. 9, 10) typical of the new style, but on the whole, the foundation pottery seems still untouched by the change. The logical conclusion to be drawn is that during the early years of the reign of Senwosret I, potters still adhered to the true First Intermediate Period style. The graves of the upper center and outskirts of Sedment cemetery N and the cemetery E graves of Gurob should therefore be later than the very early years of Senwosret I.

When we turn to the rest of the pottery presented here, it is all the more striking that no sherd or pot in figs. 63–74 bears any relation whatsoever to either the true First Intermediate Period repertoire and style, or to the pots of Sedment N and Gurob E which show a new stylistic approach to the First Intermediate Period shape styles. Parallels for the pottery of figs. 63–74 are, on the other hand, amply represented in the ceramic corpus first established by Reginald Engelbach on the basis of the finds of Riqqa and Haraga (cemeteries A, B, F, S and W I and II), to which Guy Brunton later added further types and variants in his section of the publication of pottery found at Lahun.<sup>349</sup>

The date of the beginning of the ceramic style so prominent at Riqqa, Lahun and Haraga has recently been discussed at length by Barry Kemp.<sup>350</sup> His conclusion was that graves with First Intermediate Period style pottery could still date to the “early part of the Twelfth Dynasty, perhaps down as late as the reign of Senusert II itself.”<sup>351</sup> This late date for the introduction of the “Haraga Middle Kingdom” style of pottery is shown by the Lisht pottery presented here to be incorrect, at least as far as the region of Lisht is concerned.

The list given in Table 9 shows to which numbers of the Engelbach-Brunton corpus the pottery types found around the pyramid of Senwosret I at Lisht can be equated. This list also refers to the Sedment/Gurob First Intermediate Period types wherever a relationship suggests itself, and so it is possible to see that—apart from the foundation deposit pottery—it is only in some minor instances that such relations can be detected. Notable examples are the carinated cups, the large cups with

inward turned rim (Lisht 84/165, 24d, 30h Sedment), the small jars with conical necks (Lisht 84/2, 3 and Sedment 84W), and the large- to medium-sized, short-necked jars (Lisht 84/162, 187 and Sedment 94b, c). Except for these few instances of a survival of First Intermediate Period types or traits, the pottery from the pyramid complex of Senwosret I fits well into the Engelbach-Brunton repertoire. In fact, a simple count of the examples quoted as parallels to the Lisht pottery in the list table 9 reveals that, there are (besides the parallels for the foundation deposit pots) ten parallels in the Sedment corpus, 36 in “Lahun II,” 30 in Riqqa, and 24 in Haraga. To judge by these numbers, the Lisht corpus presented here is most closely related to the pottery found around the pyramid of Senwosret II at Illahun, and least closely to the First Intermediate Period corpus.

The most striking appearance of Riqqa-Haraga-Lahun types among the Lisht finds may be the beaker jar family (here fig. 66). As Table 9 shows, various types of this family are found at Lisht South (84/28, 130 which is like Engelbach-Brunton 67 L; Lisht 84/168, which can be compared to Engelbach-Brunton 67 s [on the left in Engelbach, *Riqqeh* pl. 33]; Lisht 84/29, to which Engelbach-Brunton 67 s right can be compared). Examples of this family of medium-sized containers of beaker shape are among the most frequent pottery types found at Riqqa and Haraga.<sup>352</sup> There is no equivalent at all for this type of pot in the First Intermediate Period repertoire. It can thus be stated that at Lisht South, in the complex of the pyramid of Senwosret I, some of the most important Middle Kingdom pottery types make their first appearance.

In the same way, the large, marl clay fabric C jars which are listed by Engelbach under 67 E can be seen to appear first at Lisht South. The same is not quite true for the family of egg-shaped, marl C bottles with grooved necks (84/122, 123, fig. 74), which has the number 46 M<sub>2</sub> in the Engelbach-Brunton corpus. In terms of the material presented here, this bottle makes its appearance only in the relatively later groups.

Very important for the history of ceramics during the Twelfth Dynasty is the fact that another very frequent family, the bottles of Engelbach type 41, appears only in a few examples at Lisht South, and these are in a later context, the southeast dump (figs. 70, 71). As was seen in our detailed study of this shape family (page 141, fig. 76), the prevailing large, Nile clay bottle type found in the groups dated to Senwosret I is more globular than egg-shaped and has a neck that narrows noticeably towards the top. In the generation or two after the death of Senwosret I, this bottle develops into a shape with a straight neck or a very

<sup>344</sup> See note 339 above.

<sup>345</sup> Guy Brunton and Reginald Engelbach, *Gurob* (British School of Archaeology in Egypt and Egyptian Research Account Twenty-Fourth Year, 1918. London, 1927) 7–8, pls. 10, 11. For the position of this cemetery in comparison to others cf. Kemp and Merrillees, *Minoan Pottery* 5, fig. 2. The name is there spelled “Medinet el-Ghurab.”

<sup>346</sup> Brunton and Engelbach, *Gurob* (London, 1927) pl. 12. William Ward, *Studies on Scarab Seals Vol. 1: Pre-12th Dynasty Scarab Amulets* (Warminster, 1978) pl. 3 no. 87; pl. 12 no. 314, 316 pl. 10 no. 269. Again all these pieces fall into period 3 (op. cit. 16), as did the seals from Sedment, which were found with First Intermediate Period pots. It can thus again be seen that the pottery provides a finer means of chronological distinction than other artifacts—at least as far as present dating criteria are concerned.

<sup>347</sup> Petrie and Brunton, *Sedment* I pl. 31.

<sup>348</sup> Petrie and Brunton, *Sedment* I pls. 32 and 35.

<sup>349</sup> Cf. the respective titles: Engelbach, *Riqqeh* pls. 28–33; Engelbach, *Harageh* pls. 34–41 and Petrie, *Lahun* II pls. 56–58.

<sup>350</sup> Kemp and Merrillees, *Minoan Pottery* 23–54.

<sup>351</sup> Kemp and Merrillees, *Minoan Pottery* 54.

<sup>352</sup> In Engelbach, *Riqqeh* pls. 40–43 the type occurs a total of 50 times (excluding the marl C type 67e).

slightly conical one. Only in the middle of the Twelfth Dynasty (approximately the reign of Senwosret III) does the true Engelbach 41 bottle begin to be dominant. This happens, it seems, at the same time as the vessel indices of hemispherical cups start to drop below 170 (see page 141).

It is most appropriate, therefore, that two monuments which are firmly dated to the reign of Senwosret I—the Theban tomb of Senet, wife of Antefoker,<sup>353</sup> and the stela of Montuwoser from Abydos (fig. 77)<sup>354</sup> of the year 17 of the king—show bottles of the typical early globular shape with decidedly narrow necks.

In conclusion, it can be stated that the pottery found in the pyramid complex of Senwosret I permits an important insight into the ceramic development of the early Middle Kingdom. The foundation deposit pottery shows that during the beginning of the reign, potters still followed the First Intermediate Period tradition of pottery making. The pottery from the later part of the reign shows that by then the potters of the region of Lisht had already turned to a totally new repertoire and style with only rudimentary traces of the previous period. Since it can be shown that the pottery of figs. 63–74 was in no instance earlier than the middle of the reign, it is no wonder that an entire ceramic phase is missing from the material: the phase represented in the graves of the upper center area and the outskirts of Cemetery N at Sedment and in cemetery E at Gurob. This phase has been described as a transformation of First Intermediate Period concepts of shape into more evenly propor-

tioned shapes, a transformation coupled with the first introduction of a marl clay fabric very close to marl C. The new phase had not yet really started during the early years of Senwosret I, if the pottery from the pyramid foundation deposits can be trusted. It therefore seems safe to assume that the transformation took place during the first half of the reign of Senwosret I. After the middle of the reign the potters of the Lisht region adopted the new repertoire which was eventually to become the dominant ceramic style of the Middle Kingdom in all Egypt.

While the Lisht potters seem to have been the first—as far as present evidence goes—to have turned to a distinctly new ceramic tradition, they did not at once adopt all the types of Riqqa-Haraga-Lahun repertoire in their final version. In the production of hemispherical cups, as well as large bottles, can be seen a development which to some degree links the late First Intermediate Period pottery with the advanced repertoire found at Riqqa and Haraga. The intermediary character of the pottery from the pyramid complex at Lisht South could lead to the assumption that the potters of Lisht—*It-t3wy* were indeed the ones who “invented” the ceramic style which was later to become the dominant pottery style of the country.

<sup>353</sup> Norman de Garis Davies, *The Tomb of Antefoker, Vizier of Sesostri I, and of his wife Senet (No. 60)* (The Theban Tomb Series, 2nd Memoir. London, 1920) pl. 12.

<sup>354</sup> MMA 12.184. Hayes, *Scepter I*, 298, fig. 195.



Fig. 77. Detail from the stela of Montuwoser (MMA 12.184) showing a man holding a globular bottle.

## APPENDIX I

### The Inscriptions of the Model Coffins of Wahnoferhotep and Bener

By Peter F. Dorman

#### I. GENERAL REMARKS

The inscriptions on the model coffin of Wahnoferhotep (MMA 14.3.69A–B; see above, pp. 37–39) are in fairly good condition where preserved. Even in the places where the paint has flaked off, the original edges of the signs are visible by a differentiation in the color of the underlying gold. The drawings (fig. 9) reflect the general clarity of the text, and areas of outright damage are indicated in cross-hatching.

As for the coffin of Bener (MMA 11.151.763; see above, pp. 34–36), the paint of the inscriptions has largely fallen away, removing the yellow gesso beneath it and exposing the darker, bare wood below. The stippled areas in the drawings (fig. 7) conform to the outlines of the now-vanished gesso, while damaged surfaces are indicated in cross-hatching. Despite the extensive loss of paint, a partial reconstruction of the inscriptions is possible by examination of these alternating patterns of dark and light and by comparison with parallel textual sources. In addition to the drawings of Bener's coffin, which reflect its state of preservation, hand copies have been provided at the same scale to suggest the original placement and appearance of the inscriptions and to facilitate text recognition.

The model coffins of Wahnoferhotep and Bener are inscribed with a collection of funerary spells that form a consistent textual corpus to be found on certain full-scale coffins of the Middle Kingdom that are, like the models, of rectangular shape with vaulted lids and that share with them a similar decorative scheme (characterized by G. Lapp, "Sarg AR und MR," *LÄ* V, 432, as "13. Dyn."). Published examples of this group come from several different sites:

1. Dahshur: the coffins of Sitsobek, Nubhetepkhered, and King Hor, classified in DeBuck, *ECT* VII, as Da2C, Da3C, and Da4C.
2. Meir: the inner coffin of Hapyankhtifi (MMA 11.182.13B1–2; Hayes, *Scepter* I, 318).
3. Thebes: the coffin of Sobekaa (T3Be; the author thanks Harco Willems for this reference). In this corpus T3Be is unique in having a lid seemingly in transition between flat and vaulted forms (Steindorff, *Grabfunde des Mittleren Reiches* [Berlin, 1901], 2). Also the coffin of Nubherredi (T7C).

In addition, several unpublished examples in the MMA can be mentioned:

4. Lisht: unaccessioned pieces of gold foil from the coffin of Debeheni, from tomb LNP 879, to be published by Janine Bourriau in her publication of the Lisht north cemetery.
5. Thebes: four unpublished coffins from the area called "east of Pabasa" in the Asasif (MMA 32.3.428–.431; Hayes, *Scepter* I, 347–348, with fig. 228).

Doubtless other examples will come to light in future.

This group of coffins, together with the models of Wahnoferhotep and Bener, display a remarkable consistency in the

content and placement of spells in several of the text bands on the lid and four sides of the coffin—in particular those that "frame" each side of the coffin along its upper edge and right and left ends. The corpus of spells is characterized as follows:

Head end, horizontal band: a spell emphasizing the astral aspect of the deceased, with reference to the starry skies.

Head end, vertical columns: utterances by Ra and Mehet (these deities are occasionally replaced by others).

Foot end, horizontal band: a spell referring to Geb and Osiris; cf. CT 793s–t.

Foot end, vertical columns: utterances by the great Ennead and Resnet (these deities can be replaced by others).

Right side, horizontal band: a spell describing the union of the deceased with Anubis and the western necropolis.

Right side, vertical framing columns: speech by Anubis at the head end and the Beautiful West at the foot.

Left side, horizontal band: CT 788; the Theban coffins use PT §266 as a variant.

Left side, vertical framing columns: speech by Ra at the head end, the (Beautiful) Horizon at the foot.

Lid, central band: PT 588.

Strikingly, this collection of spells is represented on another type of monument that is utterly dissimilar in structural terms but which provides a similarly rigorous orientation for the corpus according to the four cardinal points: the royal pyramidia of the Middle Kingdom (Arnold, *Amenemhet III*, 14–16, Taf. 38–39, with further references). The earliest preserved pyramidion of the Middle Kingdom is that of Amenemhat III; unfortunately, that of Senwosret II (Petrie, *Lahun* II, pl. XXIV) is too fragmentary to offer conclusive evidence that this corpus of spells had been established as early as his reign (already noted by Arnold, *Amenemhet III*, 16). If one considers the ideal orientation of Egyptian burials on the west bank of the Nile—the coffin situated inside the tomb so that the head is pointed north, with the mummy of the deceased placed on its left side, facing east—the direct correspondence between the pyramidia and the coffins becomes obvious. The texts on the north side of the pyramidia are identical to those on the head end of the coffins; those on the east side correspond to the inscriptions on the left side of the coffins; and the same holds true for the south (foot) and west (right) sides as well. The east side of the pyramidia are also adorned with two eyes that echo the eye panel on the left side of the coffins. The larger context of pyramidion spells on coffins is to be discussed in H. Willems, *Chests of Life: A Study of the Typology and Conceptual Development of Middle Kingdom Standard Class Coffins* (forthcoming), §3.2.9.

The pyramidia, however, do not exhibit the mutilation of certain signs (especially the birds, serpents, and insects) that can be found on most of the coffins. This particular style of mutilation of signs, characteristic for the later Middle Kingdom, can presently be traced from the second half of the reign of Amenemhat III (cf. the altars and coffin of his daughter, Neferuptah; Petrie, *Kahun*, pl. 5; N. Farag and Z. Iskander, *The Discovery of Neferuptah*, 49–53, figs. 30–32, pl. 7) down to the beginning of the Eighteenth Dynasty (Z. Szafranski, *MDAIK* 41 (1985) 259, pl. 38; *n.b.* 261, n. 24).

Further definition of this corpus of texts, together with its

funerary and chronological implications, must be undertaken elsewhere; it can be briefly noted here, however, that three of these texts continued to be associated during the New Kingdom. The central inscription of the coffin lid (PT 588) and the two variants found on the left side (CT 788 and PT §266) reappear as BD 178, sections o, q, and t, respectively. Likewise, on the false-door stela in the decorated chamber of Senenmut's tomb below Deir el-Bahari (tomb 353), CT 788 and PT §266 are inscribed as pendant texts directly over the eye panel; PT 588 occurs on the south wall of the chamber.

## 2. TRANSLATION AND COMMENTARY

The numbering of each side of the coffins follows a consistent method: the horizontal line is first and the vertical columns follow in sequence from head to foot (on the long sides of the coffins) or from left to right (on the short sides). The author thanks James Allen for his valuable comments in reviewing an early version of this commentary.

### Head end:

- W. 1 *dd mdw k3 s3-nsw W3h-nfr-htp m3'-hrw*  
 B. 1 *dd mdw k3 jry-'t n 'h Bnrj m3'-hrw*  
 W. 2 *dd mdw jn Mhnt jj[.n(.j)...]*  
 B. 2 *dd mdw jn [...]*  
 W. 3 *dd mdw jn Nbt-hwt jj.n(.j) [...]*  
 B. 3 *dd mdw jn Nbt-hwt [...]*

### Foot end:

- W. 4 *dd mdw [G]bb nb t3w hr shpt Wsjr*  
 B. 4 *dd mdw Gbb nb t3w hr shp(t) Wsjr Bjnr m3'-hrw*  
 W. 5 *dd mdw jn Rsnt [...]*  
 B. 5 *dd mdw jn [...] htp.k(wj) [...]*  
 W. 6 *dd mdw jn psdt '3t [...]*  
 B. 6 *dd mdw jn [...] htp.k(wj) hr [...]*

### Right side:

- W. 7 *dd mdw ".wy Jnpw jmy-wt nb T3-dsr*  
 B. 7 *dd mdw ".wy Jnpw tpy-dw.f jmy-wt nb T3-dsr*  
*h3 s3-nsw W3h-nfr-htp hnm sw smyt*  
*h3 jry-'t n 'h Bnrj m3'-hrw*  
 W. 8 *dd mdw jn Srkt jj[.n(.j)...]*  
 B. 8 *dd mdw [...]*  
 W. 9 *dd (mdw) jm3hy hr Jm[sty]*  
 B. 9 *dd mdw ('t n 'h Bjnr [...]*  
 W. 10 *dd (mdw) jm3hy hr Hp[y]*  
 B. 10 *dd mdw hr Hpy [...]*  
 W. 11 *dd mdw jn Tfnwt jj.n(.j) [...]*  
 B. 11 *dd mdw hr [...]*

### Left side:

- W. 12 *dd mdw wn hr n s3-nsw W3h-nfr-htp*  
 B. 12 *dd mdw wn hr n jry-'t n['h Bnrj m3'-]hrw*  
*m3.f nb 3ht d3.f hrt m htp h'.f m ntr '3*  
*m3n.f nb 3ht d3.f*  
 W. 13 *dd mdw jn R'rdj.n.(j) 3ht [...]*  
 B. 13 *dd mdw [...]*  
 W. 14 *dd (mdw) jm3hy hr Dw3-mwt.f [...]*  
 B. 14 *dd mdw [...]*  
 W. 15 *dd (mdw) jm3hy hr Kbh-snw.f [...]*  
 B. 15 *dd mdw [...]*  
 W. 16 *dd mdw jn Jnpw nb S[p3...]*  
 B. 16 *dd mdw [...]*

### Lid:

- W. 17 *dd mdw h3 [...] m ntr*  
 B. 17 *[...Bnr]j psš.n s(y) mwt.k Nwt hr.k m rn.s Št-pt*

## TRANSLATION

The translation below follows the inscriptions on the model coffin of Wahnoferhotep, which are better preserved and largely more complete than those on the coffin of Bener; differences between the two are described in the footnotes.

### Head end:

- 1 Words spoken: N.<sup>a</sup> is lifted up.<sup>b</sup>  
 2 Words spoken by *Mhnt*: [I have] come [...]<sup>c</sup>  
 3 Words spoken by Nephthys: (I) have come [...]<sup>d</sup>

### Foot end:

- 4 Words spoken: Geb,<sup>e</sup> lord of the lands, is under the ribs of Osiris.<sup>f</sup>  
 5 Words spoken by *Rsnt*: [...]<sup>g</sup>  
 6 Words spoken by the great Ennead: [...]<sup>h</sup>

### Right side:

- 7 Words spoken: the arms of Anubis, he who is upon his mountain,<sup>i</sup> who is in his bandages, lord of *T3-dsr*, are around N.; the necropolis unites with him.<sup>k</sup>  
 8 Words spoken by Selket: [I have] come [...]<sup>l</sup>  
 9 Words (spoken)<sup>m</sup>: revered before Im[sety...]<sup>n</sup>  
 10 Words (spoken): revered before Hap[y...]<sup>o</sup>  
 11 Words spoken by Tefnut<sup>p</sup> (I) have come [...]

### Left side:

- 12 Words spoken: the face of N. is open, that he might see the lord of the horizon, that he might traverse<sup>q</sup> the heaven safely,<sup>r</sup> that he might appear<sup>s</sup> as a great god.<sup>t</sup>  
 13 Words spoken by Ra: I have given the [beautiful] horizon.<sup>u</sup>  
 14 Words (spoken): revered before Duamutef [...]<sup>v</sup>  
 15 Words (spoken): revered before Kebehsenuef<sup>w</sup> [...]  
 16 Words spoken by Anubis,<sup>x</sup> lord of *S[p3y...]*

### Lid:

- 17 Words spoken: O [N.] your mother Nut has spread herself over you in her name of *Št-pt*,<sup>z</sup> [she has caused you to be] as a god.<sup>aa</sup>

## NOTES

<sup>a</sup> Parallels give *k3 b3* N., the word "ba" having been left out on the models, doubtless for reasons of space.

<sup>b</sup> The complete text should read: "the *b3* of N. is lifted up to the height of Orion, that he might mingle in the nether-world," following Amenemhat III and Hapyankhtifi.

<sup>c</sup> *Mhnt* usually appears in this location, and her speech more often reads "I am satisfied with it, O you whom I love." For *Mhnt*, Neith of the northern shrine in Sais, cf. H. Bonnet, *Reallexikon*, 515; K. Sethe, *ZÄS* 44 (1907) 27–28; S. Schott, *RdE* 19 (1967) 99–110.

<sup>d</sup> On all parallels Ra appears in this position, with the following text: "he has established N. among the starry skies forever." Nephthys, of course, is the protective goddess traditionally associated with the head end of the coffin.

<sup>e</sup> Wahnoferhotep seems to have omitted the first consonant in Geb's name; there is no trace of an original *g* visible on the

gold leaf. For the orthography of Geb with double consonant *b*, cf. K. Sethe, *ZÄS* 43 (1906) 148–49.

<sup>f</sup> The model coffins do not provide the full text, which appears as follows on the full-scale coffins and pyramidia: “Geb, lord of the lands, is under the ribs and Osiris under the feet of N.” On the coffins of Bener the name of the deceased has been added after *Wsjr*; on that of Wahnoferhotep *Wsjr* is determined by a round sign, perhaps the pupil standing for the eye.

<sup>g</sup> The speaker, *Rsnt*, also appears on the inner coffin of Hapyankhtifi; Amenemhat III and the black Theban coffins place Ptah (-Sokar) in this position. Nothing is left of the speech on Wahnoferhotep, but Bener apparently reads in part: “I am satisfied. . . .” For *Rsnt*, see the references in n.c. Other pairings of *Mhnt* and *Rsnt* exist on L2Li (S. Schott, *RdE* 19 [1967] 100, fig. 1), Da2X, and Da4X.

<sup>h</sup> Parallels give either the great Ennead or “all the gods;” Bener again can be partially restored, “I am satisfied with. . . .”

<sup>i</sup> The phrase *tpy-dw.f* is not found on Wahnoferhotep, but Bener has the full list of epithets, as do T7C and the four black coffins from Thebes.

<sup>j</sup> The text of Bener ends at this point.

<sup>k</sup> The spell as it continues on the coffins from Thebes and on Hapyankhtifi reads: “. . . the necropolis unites with him within the shrine of the lord of offerings, so that he who is within her might be well, and that she might make N. the heir of the lord of eternity and everlastingness; as for the gods, may their protection be behind you.” T3Be offers a slightly different ending. A repetition of the spell appears on the interior right side of the outer coffin of Hapyankhtifi, MMA 12.183.11A, but oriented from right to left, representing a precise reflection of the text as it appears on the inner coffin.

<sup>l</sup> Parallels for this location contain a speech by Anubis; possibly the Selket text derives from one of the vertical side bands on the left side of a coffin such as T7C: “(I) have come that I might give to you every goodly offering.” The Theban group of black coffins omits *jj.n. (j)*.

<sup>m</sup> The word *mdw* must be understood here, as a lone cobra at the top of the column makes no sense; the staff has probably been written as a reed leaf introducing *jm3hy*. The same situation exists in cols. 10, 14, and 15.

<sup>n</sup> There is sufficient space to restore a tall *s*, tall *tj*, and reed leaf, with no further text. On the coffin of Bener, the paint traces give part of his title and name: “of the palace, Bener,” which may indicate a running spell that continues in sequence from column to column; see note o, below, as well.

<sup>o</sup> The only signs lost are doubtless two reed leaves, completing the name of Hapy, as in col. 10. Bener seems to read “before Hapy,” but the context is uncertain.

<sup>p</sup> Parallels uniformly provide a speech by the “Beautiful West,” rather than Tefnut. Tefnut’s speech may derive from parallels in the corpus that are positioned in one of the vertical bands on the right side of the coffins: “(I) have come that I might be the protection of N.” On Bener’s coffin, the first sign group below *dd mdw* appears to read *hr*, “before. . . .”

<sup>q</sup> The text of Bener ends at this point.

<sup>r</sup> In adding the phrase *m htp* at this point, Wahnoferhotep appears to be unique among the sources considered; the sentence has been translated with prospective import due to the presence of this phrase.

<sup>s</sup> The verb *h’* alternates with *hpr*, as noted by R. Faulkner, *AECT* III, 1, n. 1. Among the sources not considered by him, the royal pyramidia and Hapyankhtifi use *h’*.

<sup>t</sup> For the end of this text, cf. CT 788; Faulkner, *ibid.*, 1, translates the continuation: “. . . he causes him to appear as the great god, the Lord of eternity, who will never perish, and he will be worshipped in the starry sky.” On the black coffins from Thebes in the MMA, CT 788 is replaced in this position by PT §266. As on the right side, the text is reflected on the interior left side of the outer coffin of Hapyankhtifi, written from left to right. For other occurrences of CT 788, cf. P. Ver-nus, *RdE* 28 (1976) 124, a reference provided to the author by H. Willems.

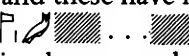

<sup>u</sup> Parallels suggest a restoration of *3ht [nfr]*, although the spell should continue with a dative, as on all parallels. The continuation of the speech may be found on the pyramidion of Amenemhat III: “I am satisfied with it, O you whom I love.” Despite the preservation of considerable paint traces on Bener, the speech by Ra does not seem to fit the shapes of the necessary signs; cf. note n, above.

<sup>v</sup> The tops of three vertical signs may be seen on Wahnoferhotep in cols. 14 and 15. The first may be a *ntr* sign determining the god’s name, but such determinatives are otherwise not written; the second and third signs may represent the twisted flax and throne of *htm*, “to provide.” For this verb in a similar position, see Da2C, Da3C, T7C, and the anonymous coffin CG 28032. The traces on Bener do not permit the restoration of text in the following three columns, but each seems to commence with *dd mdw*.

<sup>w</sup> The pairing of Duamutef and Kebehsenuf on the left side of the coffin—and the pairing of Imsety and Hapy on the right—is paralleled by the inner coffin of Hapyankhtifi; other coffins contain different combinations.

<sup>x</sup> On the royal pyramidia the Horizon is the speaker at this location.

<sup>y</sup> Although the epithet of Anubis is unique to Wahnoferhotep in this context, it seems to be the only restoration possible.

<sup>z</sup> The text on the lid of Wahnoferhotep is largely illegible; only the first and last signs are identifiable, and these have not been included in the drawing of the coffin: . . .  Additional smudges of black are visible in the area where Wahnoferhotep’s name and title would have appeared, but no signs can be plausibly restored. The lid of Bener’s coffin provides the text for much of the translation here, ending with the words *m m.s Št-pt*.

<sup>aa</sup> PT 588 gives the full context of the extract on the model coffins. Faulkner, *AEPT*, 241, translates the continuation of the spell: “. . . she has caused you to be as a god to your foe in your name of ‘God,’ she has protected you from evil in her name of ‘Great Protectress,’ for you are the eldest among her children.”

# APPENDIX II

## Campaigns of the Metropolitan Museum of Art Egyptian Expedition to Lisht, 1906–1934

### DIRECTOR: ALBERT M. LYTHGOE

I	Season 1906/07	Amenemhat I	A. M. Lythgoe, <i>BMMA</i> 2, April 1907, 61–63; A. M. Lythgoe, <i>BMMA</i> 2, July 1907, 113–117; A. M. Lythgoe, <i>BMMA</i> 2, Oct. 1907, 163–169.
II	Season 1907/08	Amenemhat I	A. M. Lythgoe <i>BMMA</i> 3, May 1908, 83–84.
		Amenemhat I	A. C. Mace, <i>BMMA</i> 3, Oct. 1908, 184– 188.
		Senwosret I	A. M. Lythgoe, <i>BMMA</i> 3, Sept. 1908, 170–173.
III	Season 1908/09	Senwosret I	A. M. Lythgoe <i>BMMA</i> 4, July 1909, 119–121.
IV	Season 1911/12	unrecorded	
V	Season 1913/14	Amenemhat I	A. C. Mace, <i>BMMA</i> 9, Oct. 1914, 207–222.
		Senwosret I	A. M. Lythgoe, <i>BMMA</i> 10, Feb. 1915, Supp. 5–22.

### DIRECTOR: AMBROSE LANSING

VI	Season 1916/17	Senwosret I	} A. Lansing, <i>BMMA</i> 15, July 1920, II, 3–10.
VII	Season 1917/18	Senwosret I	

### DIRECTOR: ARTHUR C. MACE

VIII	Season 1920/21	Amenemhat I	A. C. Mace, <i>BMMA</i> 16, Nov. 1921, II, 5–19.
IX	Season 1921/22	Amenemhat I	A. C. Mace, <i>BMMA</i> 17, Dec. 1922, II, 4–18.

### DIRECTOR: AMBROSE LANSING

X	Season 1923/24	Senwosret I	A. Lansing, <i>BMMA</i> 19, Dec. 1924, II, 33–43.
XI	Season 1924/25	Senwosret I	A. Lansing, <i>BMMA</i> 21, March 1926, II, 33–40.
XII	Season 1931/32	Senwosret I	A. Lansing, <i>BMMA</i> 28, April 1933, II, 3–22.
XIII	Season 1932/33	Senwosret I	W. C. Hayes, <i>BMMA</i> 28, Nov. 1933, II, 4–38.
XIV	Season 1933/34	Senwosret I	A. Lansing, <i>BMMA</i> 29, Nov. 1934, II, 3–40.

All campaigns were supported by the Rogers Fund, the cam-  
paigns 1920–1922 and 1923/24 with additional funds from the  
Edward S. Harkness Gift.

APPENDIX III

Professional Staff Participating in Seasons I–XIV					
Field Directors:	Albert M. Lythgoe	1907–09, 1913/14 till 1924	Egyptologists:	Arthur C. Mace	1907–09, 1912–14, 1920–22
	Ambrose Lansing	1912/13, 1913/14 Assistant 1916–18, 1923–25, 1931/32 in charge 1932–34 Field Director		William C. Hayes	1931–34
	Herbert E. Winlock	1907–09, 1913/14 Assistant	Staff Members:	H. G. Evelyn White	1912–14
				Henry A. Carey	1931–34
			Photographer:	Harry Burton	1931–34
			Surveyor and Draftsmen and Architects:	Lindsley F. Hall	1913/14, 1931–34
				Walter Hauser	1921/22
				W. J. Palmer-Jones	1908/09
				George L. Howe	1924/25
			Anthropologist:	Alex Hrdlicka	1908/09





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### Egyptian Museum Cairo

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397-402	Osiride statues Senwosret I,	18-22, 41, 56-57
411-420	seated figures Senwosret I,	21, 41, 56
4001-4004	canopic jars Senwosret I,	70 n.233
5006-5018	canopic jars Senwosret I,	70 n.233

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32876	granite altar Senwosret I,	44 n.141, 59 n.201
44960	statuette of Mentuhotep,	23 n.60
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58905-58906	jars south wall deposit,	112-115
58908-58919	hawk panel fragments,	62
59210-59211	hawk panel fragments,	62
60248	pottery entrance cut deposit,	92, 109, 112
60269	hawk panel fragments,	62
63909-63914	bronze hoard objects,	105
63941	lion's head spout,	78, 81
63942	relief entrance chapel,	80
63945	relief entrance chapel,	79
63946	relief entrance chapel,	79-80

### Metropolitan Museum of Art, New York

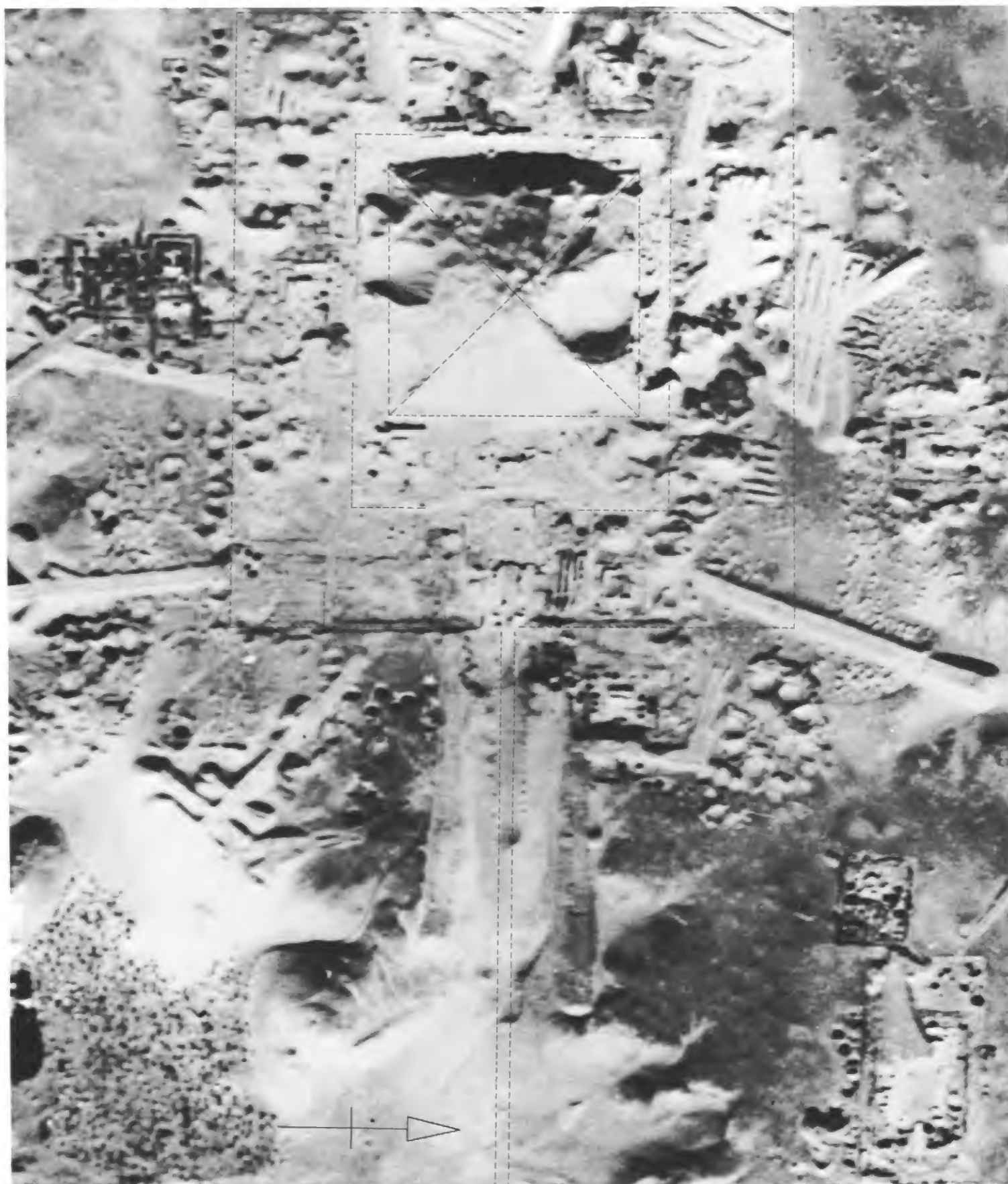
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09.180.8-	hawk panel fragments,	62-63
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09.180.525	"protodoric" column,	41, 54
09.180.529	Osiride statue Senwosret I,	19, 22
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34.1.205-	hawk panel fragments,	62-63
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44.4.5	<i>shabti</i> of Bener,	36

PLATES 1–105







Pl. 1: Aerial view of the Lisht South Cemetery after conclusion of the excavation in 1934.



Pl. 2: The mortuary temple of Senwosret I after conclusion of the excavation in 1914.



Pl. 3a: Upper end of the causeway with foundations for Phase A walls. See pl. 77.



Pl. 3b: Upper end of causeway with southern gate of outer court. See fig. 2, pl. 76.



Pl. 3c: Causeway foundations between statue niches VII-IX. See fig. 1.



Pl. 3d: Upper end of causeway and main entrance of temple. See pl. 76.





Pl. 4a: South exit of causeway with statue base S III. See fig. 2.



Pl. 4b: South exit of causeway seen from inside. See fig. 2.



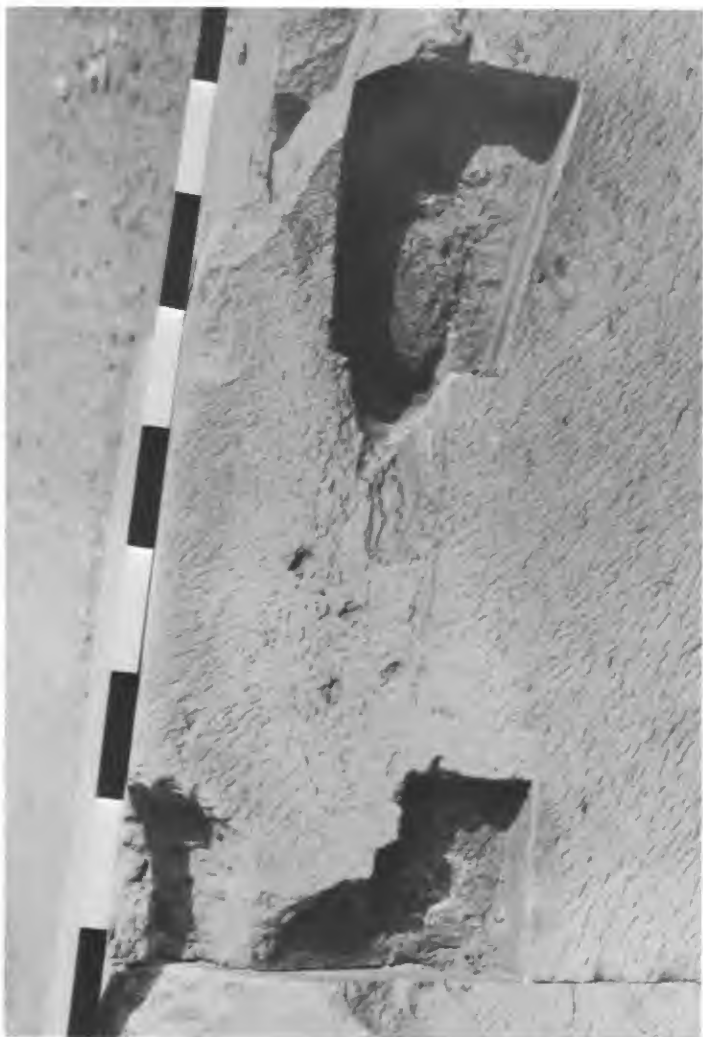
Pl. 4c: Statue niche VII and preserved causeway pavement. See fig. 1.



Pl. 4d: Foundation hole for statue N II. See pl. 76.



Pl. 5b: Foundation hole for statue S I. See pl. 76.



Pl. 5d: Dressed and repaired inner surface of Phase A wall of causeway.



Pl. 5a: Subfoundations of upper end of causeway. See pl. 76.



Pl. 5c: Dressed inner surface of Phase A wall of causeway.

PLATE 6



Pl. 6a-c: Causeway statue of Senwosret I, MMA o8.200.1.



Pl. 6d: Findspot of the causeway statue of Senwosret I, MMA o8.200.1.



Pl. 6e: Lower part of a causeway statue.





Pl. 7a: Causeway statue of Senwosret I, MMA 09.180.529.



Pl. 7b: Upper part of causeway statue of Senwosret I, MMA 09.180.529.



Pl. 7c: Lower part of causeway statue N IX.



Pl. 7d: Lower part of causeway statue S V.





Pl. 8a: Northwest corner of causeway from the south. See pl. 8o.



Pl. 8b: Northwest corner of causeway from the west. Detail of L 13-14, 1186. See pl. 8o.



Pl. 9a: Northwest corner of causeway with northern gate during excavation in 1914. See pl. 8o.



Pl. 9b: Excavation of crevice east of northern gate, stone causeway walls in background. See pl. 8o.



Pl. 9c: Subfoundations of court in front of cabin in 1984/85. See pls. 74, 78a.

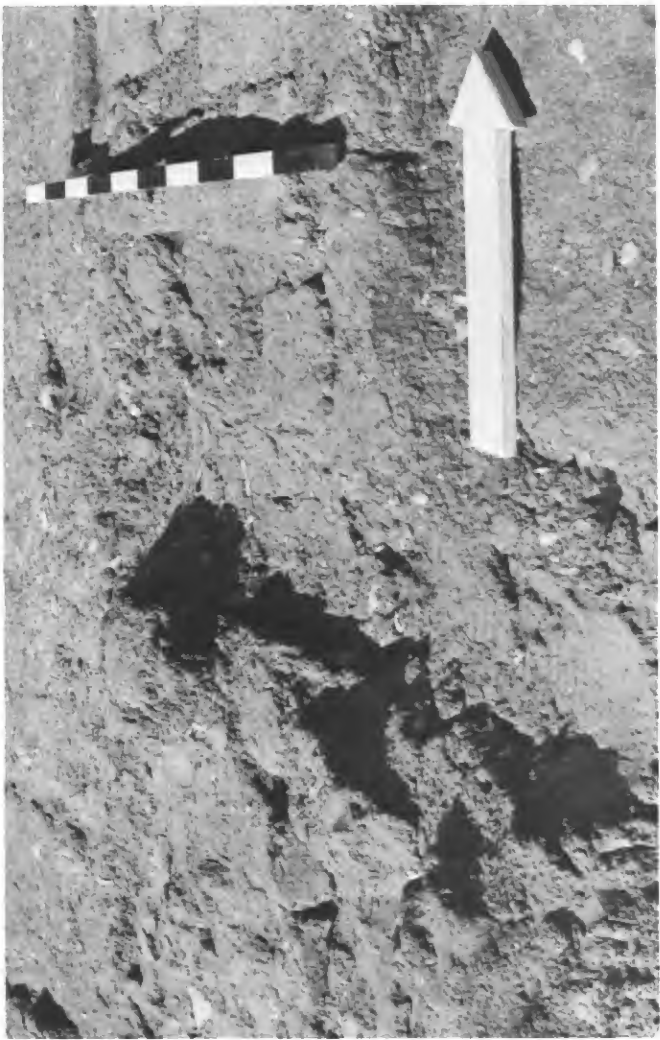


Pl. 9d: Layers of fill L-M against south face of brick causeway wall. See pl. 74.





Pl. 10b: Section of pottery dump east of the cabin as found in 1914.



Pl. 10d: Drain channel through brick causeway wall.



Pl. 10a: View of cabin from the southwest. Rough boxes in foreground.



Pl. 10c: The "hidden chamber" in the brick causeway wall.



Pl. 11b: Northwest corner of causeway in center, hole of coffin of Wahnoferhotep.



Pl. 11d: The model coffin of Wahnoferhotep *in situ*, with brick enclosure wall of outer court.



Pl. 11a: Model coffin of Bener under pavement of the causeway widening.



Pl. 11c: Model coffin of Wahnoferhotep *in situ*, with three jars and covers.





Pl. 12a: Northeast corner of brick causeway wall with reeds between brick courses.



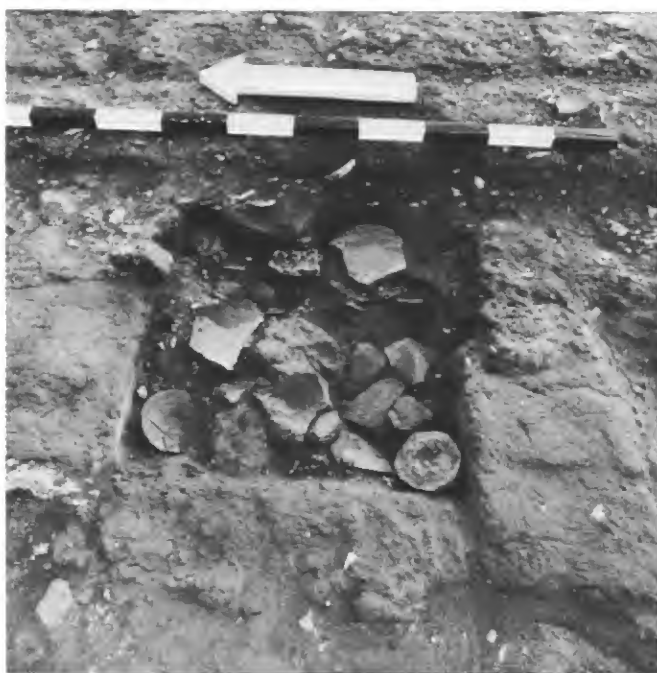
Pl. 12b: Remains of wooden implements found below the brick pavement of the cabin.



Pl. 12c: Gypsum lining of basin below brick pavement of the cabin.



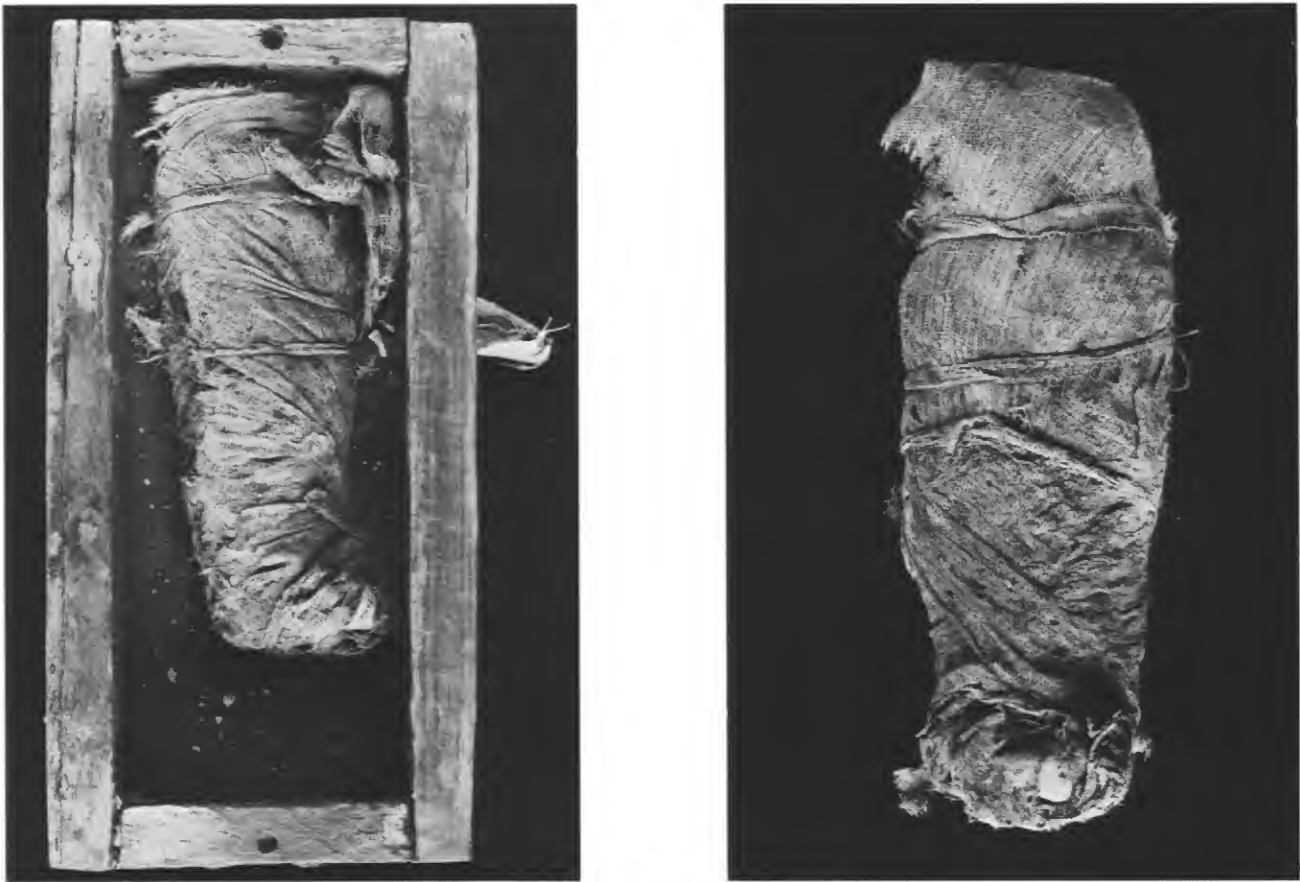
Pl. 12d: Wooden pegs found below the brick pavement of the cabin.



Pl. 12e: Pottery sherds found between large bricks just west of the cabin.



Pl. 12f: Remains of wooden implements found below the brick pavement of the cabin.



Pl. 13a–b: *Shabti* of Bener, MMA 44.4.5, in its wrappings.



Pl. 13c–e: *Shabti* of Bener, MMA 44.4.5.



Pl. 14a: Model coffin for the *shabti* of Wahnoferhotep, MMA 14.3.69.



Pl. 14b: Model coffin of Wahnoferhotep, disassembled.





Pl. 15a-c: *Shabti* of Wahnoferhotep with remains of wrappings.



Pl. 15d-f: *Shabti* of Wahnoferhotep, MMA 14.3.70.



Pl. 16a: Southeast corner of mortuary temple during excavation in 1908/09. See fig. 16, pl. 86.



Pl. 16b: Southwest magazines and square antechamber during excavation in 1909/09. See foldout II.





Pl. 17a: Granite threshold of main temple entrance.  
See fig. 11A.



Pl. 17b: Column base in square antechamber. See pl. 84.



Pl. 17c: Square antechamber during excavation in 1914.  
See pl. 84.



Pl. 17d: Remnants of wall decoration and architrave of  
square antechamber.



Pl. 17e: North side of temple near southwest corner of  
pyramid 8. See pl. 82.



Pl. 17f: Cavetto block north of the *Pr-wrw*. See fig. 18.





Pl. 18a: Pillared court of mortuary temple. See pl. 81, foldout IIIa.



Pl. 18b: Robbers' hole in pillared court of mortuary temple. See foldout IIIa.



Pl. 18c: Small pavement deposits in pillared court.



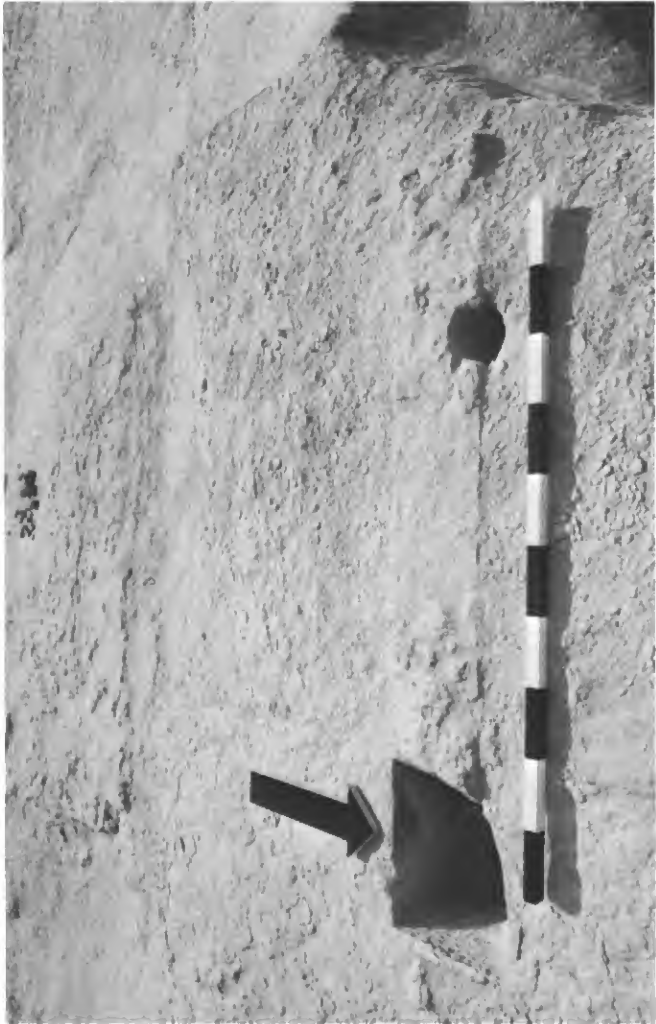
Pl. 18d: Remains of north wall of pillared court. See foldout IIIa.



Pl. 19a: North end of transverse corridor with statue base MMA [14.3.2.] See pl. 82.



Pl. 19b: Statue base MMA [14.3.2.] in subfoundations of rear part of temple.



Pl. 19c: Doorsill of south exit of transverse corridor. See pl. 83.



Pl. 19d: Core masonry of the room of the five niches from the east.



Pl. 20b-c: Architrave of the square antechamber. See figs. 12-13.



Pl. 20c: Defaced architrave of square antechamber west of the Ka-pyramid.



Pl. 20a: Last remnants of the square antechamber in 1984. See pls. 17b-d, 84.



Pl. 20d: Traces of column on base in square antechamber. See pls. 17b, 84.





Pl. 21a-b: Southeast corner of southeast magazines and south exit of transverse corridor. See pl. 83.



Pl. 21d: Foundations of north exit of transverse corridor and crypt (front). See pl. 82.

Pl. 21c: Foundations of east part of offering hall.



Pl. 22b: Pavement of crypt. See pl. 85.



Pl. 22c: Area of crypt during excavation of lion's-head spout. See pls. 82, 85 and foldout II.



Pl. 22a: Pavement of crypt. See pl. 85.



Pl. 23a: Southeast corner of temple during excavation in 1908/09. See fig. 16, pl. 86.



Pl. 23b: Remains of southeast corner of temple in 1987. See fig. 16, pl. 86.



Pl. 23c: Brick chamber with water basins during excavation in 1908/09. See fig. 16, pl. 86.



Pl. 23d: Remains of water basins during excavation in 1908/09. See fig. 16, pl. 86.





Pl. 24a: *Pt-urru* and brick chamber during excavation in 1908/09.



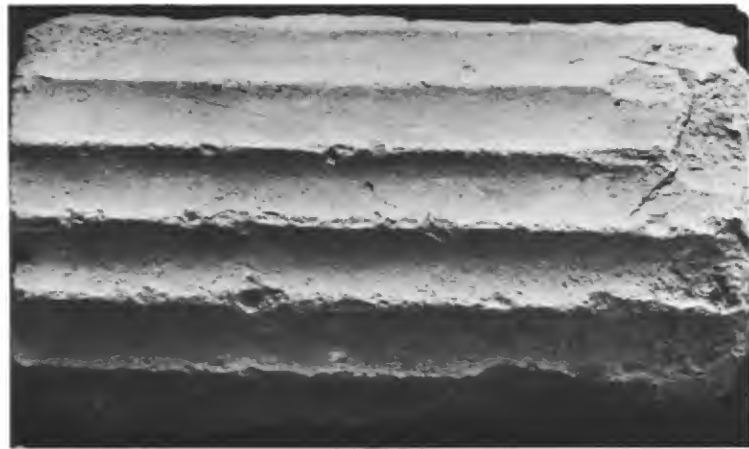
Pl. 24b: Basin-hole in brick chamber during excavation in 1984/1985. See fig. 17.



Pl. 24c: Basin-hole in brick chamber during excavation 1984/1985. See fig. 17.



Pl. 24d: Pottery deposit behind door into brick chamber. See pl. 86.



Pl. 25a: Fluted limestone column of uncertain origin.



Pl. 25b: Base of royal statue from mortuary temple, MMA [14.3.2]. See pl. 19a–b.



Pl. 25c: Lion's-head spout of mortuary temple, MMA 09.180.530. See pl. 22c.



Pl. 25d: Socket and setting lines for corner torus of southeast corner of temple. See pl. 86.



Pl. 25e: Paws of lion's-head spout MMA [25.1.1].



Pl. 26a: Drain J under the pavement of the northern wing of the temple. See pl. 104.



Pl. 26b: Outlet of drain J into the north court.  
See pls. 58b, 104.



Pl. 26c: Findspot of the seated figures of Senwosret I found in 1894. See pl. 82.



Pl. 26d: Findspot of the seated figures of Senwosret I found in 1894. See pl. 82.



Pl. 26e: Pottery deposit in the cachette of the seated figures. See pl. 82.





Pl. 27a: Western inner court and west side of pyramid 1932. See pls. 40a, 93a.



Pl. 27b: Northern inner court and pyramid entrance 1934.





Pl. 28b: South wall of inner enclosures with coping block. See fig. 21.



Pl. 28d: Subfoundations of inner court at northwest corner. See pls. 87 and 94 D.



Pl. 28a: South wall of inner enclosure with south wall deposit 5.



Pl. 28c: Foundations of north wall of inner enclosure, west of pyramid entrance.



Pl. 29a: Pavement of western inner court behind drain D. See pl. 88.



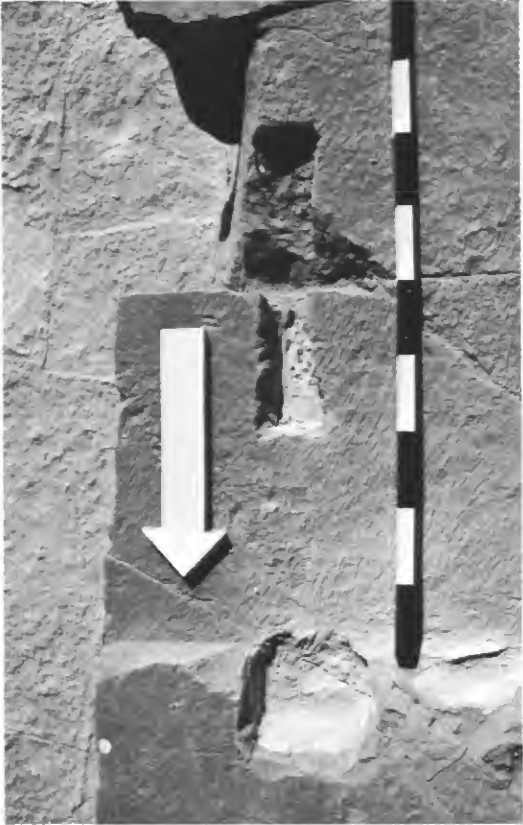
Pl. 29b: Foundations of northwest corner of pyramid and inner court. See pls. 87 and 94.



Pl. 29c: Socket in surface of foundation of inner enclosure wall. See fig. 22, and pl. 88.



Pl. 29d-e: Pry-hole and cramp slot in western inner enclosure wall. See pl. 88.





Pl. 30a: Fecundity figure relief, Cairo, Jd'E 60 260.



Pl. 30b: Fecundity figure relief of hawk panel S 4.



Pl. 30c: Fecundity figure relief of hawk panel S 23.



Pl. 30d: Hand of fecundity figure of hawk panel S 23.





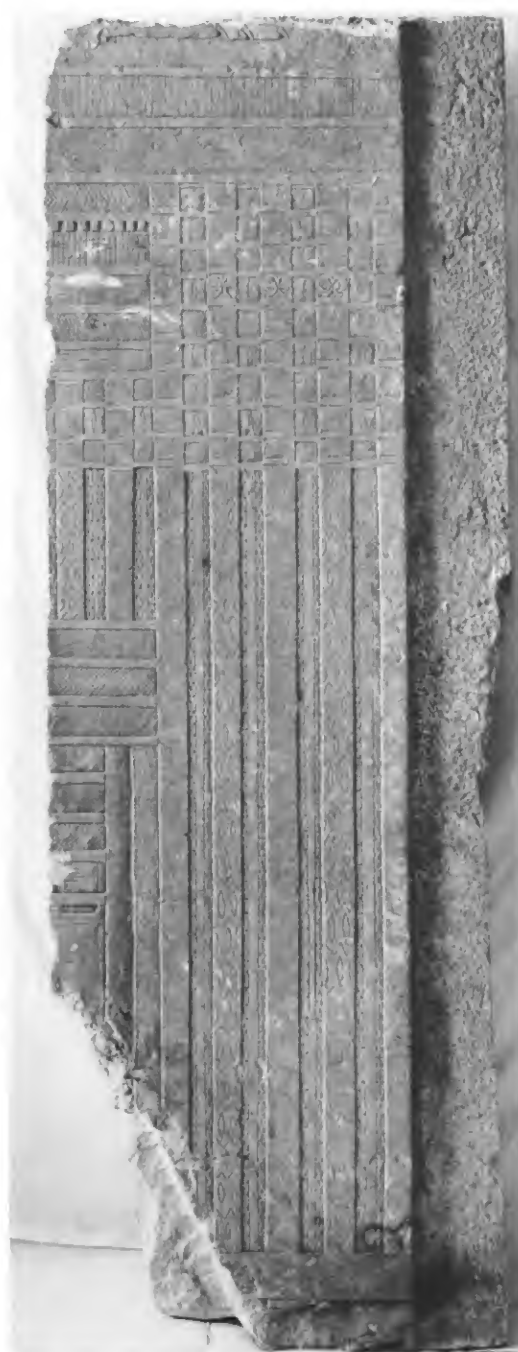
Pl. 31a: The two hawks of panels S I and N I standing back to back.



Pl. 31c: The two palace façades of panels S I and N I.



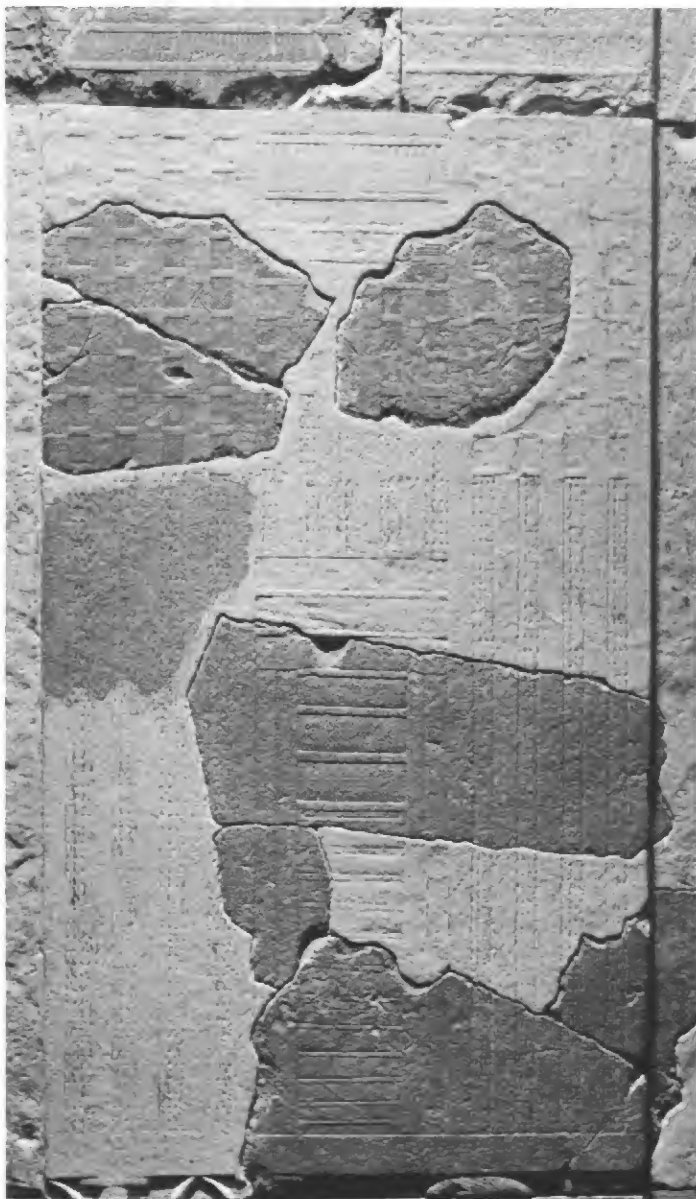
Pl. 31d: Lower end of the two panels S I and N I.



Pl. 31b: Palace façade. Cairo, Jd'E 58 910.



Pl. 31e: Palace façade of enclosure wall, probably S 24.



Pl. 32a: Palace façade as reconstructed in the Metropolitan Museum of Art hawk panel MMA 34.1.205.



Pl. 32b: Fragments of palace façade during excavation.



Pl. 32c: Part of a palace façade *in situ*. Position not known.





Pl. 33a-e: Fragments of royal names of the hawk panels: a incorporated into MMA 34.1.206 (pl. 36a), b and c into MMA 34.1.205 (pl. 36b), d into MMA 34.1.207 (pl. 36c) and e into MMA 34.1.208 (pl. 36d).



Pl. 34a–f: Fragments of hawks of hawk panels: c and d incorporated into MMA 34.1.207 (pl. 36c), e into MMA 34.1.206 (pl. 36a), and f into MMA 34.1.205 (pl. 32b).



Pl. 35a: Fragment of hawk, Egyptian Museum, Cairo Jd'E 58 909. See pl. 35d.



Pl. 35b: Fragment of feet of hawk.



Pl. 35c: Fragment of feet of hawk.



Pl. 35d: Reconstruction of hawk panel in Egyptian Museum, Cairo; Jd'E 58 909, 58 910, 58 914, and others.



Pl. 35e-f: Coping block of southern inner enclosure wall. See fig. 21, pl. 28b.





Pl. 36a: Reconstructed hawk panel MMA 34.1.206.



Pl. 36b: Reconstructed hawk panel MMA 34.1.205.



Pl. 36c: Reconstructed hawk panel MMA 34.1.207.



Pl. 36d: Reconstructed hawk panel MMA 34.1.208.



Pl. 37a: Area north of pyramid entrance during excavation 1932/33.



Pl. 37b: Area of pyramid entrance during excavation 1933/34.





Pl. 38a: Skeleton walls of south end of east side of main pyramid. See fig. 23.



Pl. 38b: Core masonry at top of pyramid. See p. 66, and pl. 95a.



Pl. 38c: Backing stones of casing on west side of main pyramid.



Pl. 38d: Mortar in core masonry behind backing stones.



Pl. 39a-b: Remains of southwest and northwest corner of pyramid in 1931/1932.



Pl. 39c: Remains of casing blocks at pyramid southeast corner. See pl. 95b.



Pl. 39d: Southeast corner block of pyramid casing. See pl. 95b.





Pl. 40b: Damaged casing blocks east of pyramid entrance. See pl. 91.



Pl. 40d: Damaged and repaired casing on west side of pyramid. See pl. 93a.



Pl. 40a: Pyramid casing after cleaning of west side of pyramid 1931/1932.  
See pls. 27a, 93a.



Pl. 40c: Course 5 of pyramid casing on west side of pyramid. See pl. 93a.



Pl. 41b: Cavity left by patching slabs of pyramid casing now fallen off.



Pl. 41d: Repaired blocks in course 7 of pyramid west side. See pl. 93a.



Pl. 41a: Socket for patching slab over ancient cracks in the casing of the north side of the pyramid.



Pl. 41c: Mortar used to repair crack in casing block.

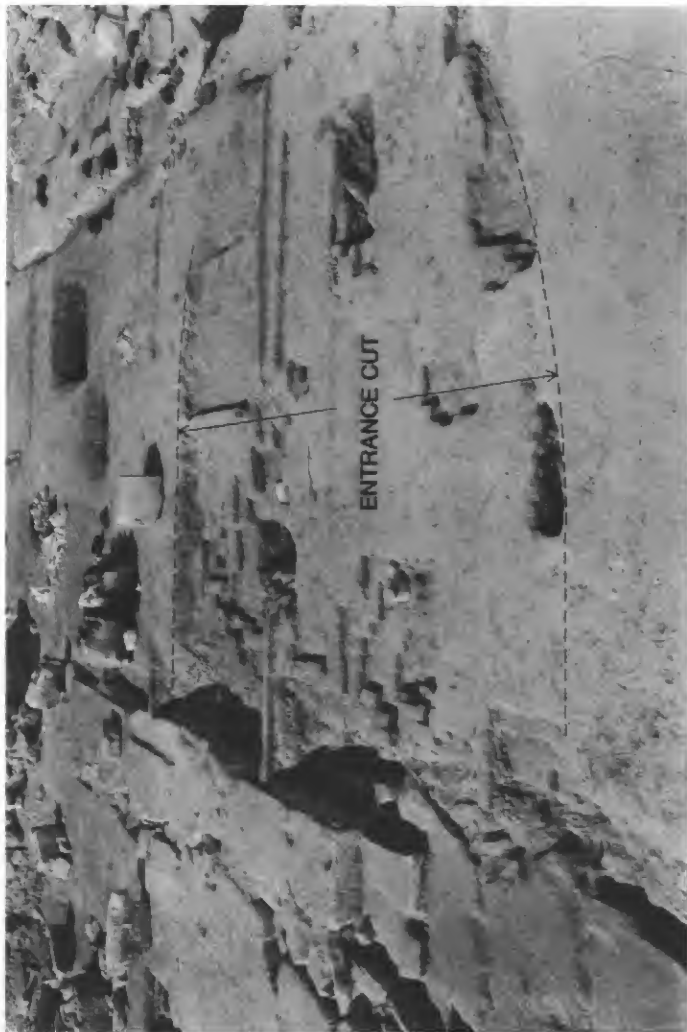




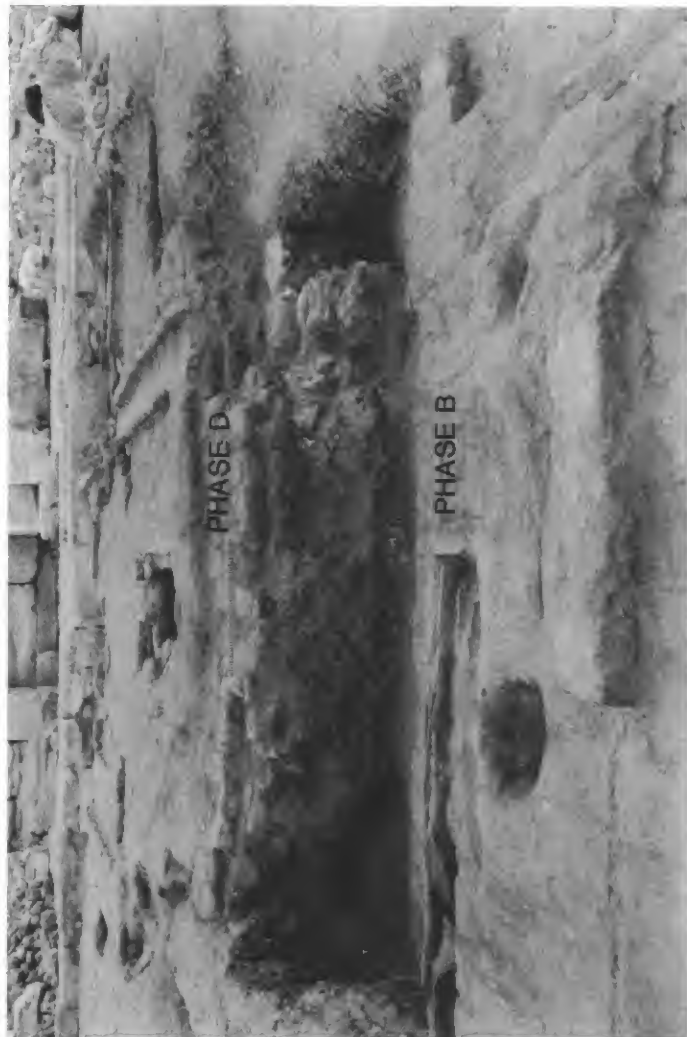
Pl. 42a: Stepped masonry of pyramid core on west side of pyramid, 1987.



Pl. 42b: Stepped masonry of pyramid core on west side of pyramid, 1987.



Pl. 42c: Outer court in north with surface of brick-filled entrance cut. See pl. 92.

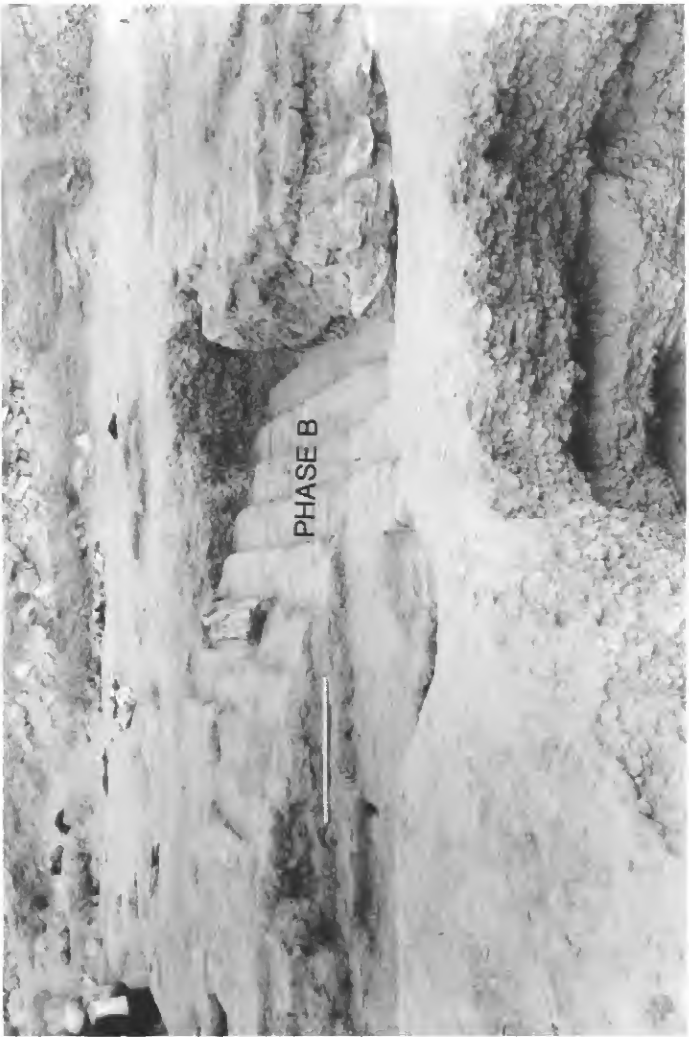


Pl. 42d: Topmost steps of entrance cut, phase B, with later fill (phase D). see pl. 92.





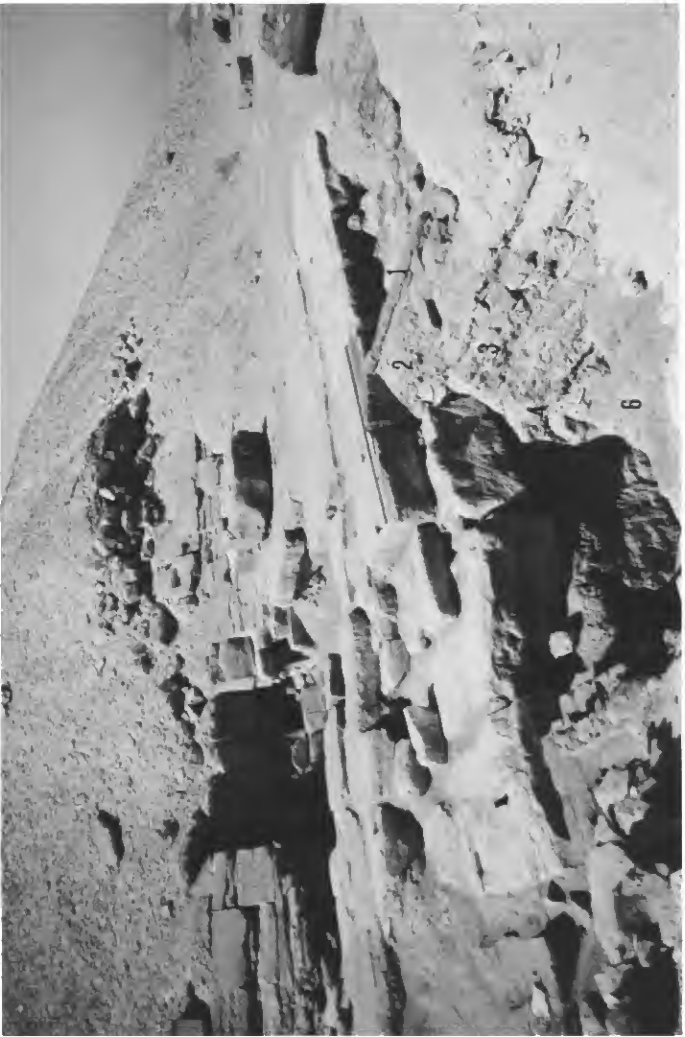
Pl. 43a: Entrance cut with timber of surface phase C. See pl. 92.



Pl. 43b: Topmost steps of entrance cut, phase B, with timber of phase B *in situ*. See pl. 92.



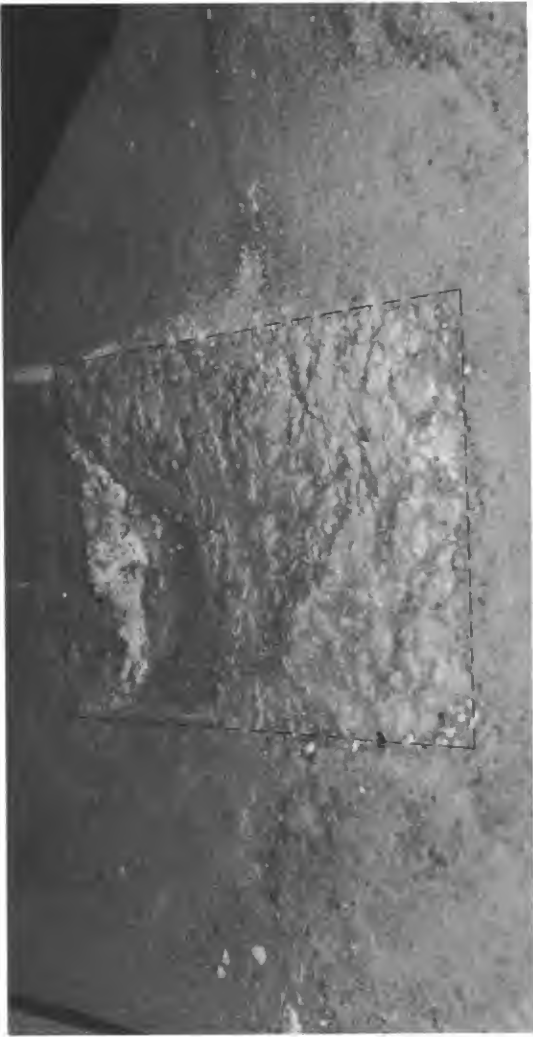
Pl. 43c: Entrance cut in front of inner enclosure wall after the excavation in 1987. See pl. 92.



Pl. 43d: Entrance cut in front of inner enclosure wall after the excavation in 1987. See pl. 92.



Pl. 44b: Hole in front of pyramid entrance after the excavation in 1933/34. See pl. 91.



Pl. 44d: Limestone slab inserted into granite floor of entrance corridor. See pl. 89C.



Pl. 44a: Hole in front of pyramid entrance after the excavation 1933/34. See pl. 91.



Pl. 44c: Crushed lower end of second plug in entrance corridor. See pl. 89.



Pl. 45a-b: Ka-pyramid after cleaning in 1984/1985.



Pl. 45d: Casing blocks added in phase P 2 against Ka-pyramid, north side.



Pl. 45c: Casing of Ka-pyramid, phase P 1, and added layers, P 2.





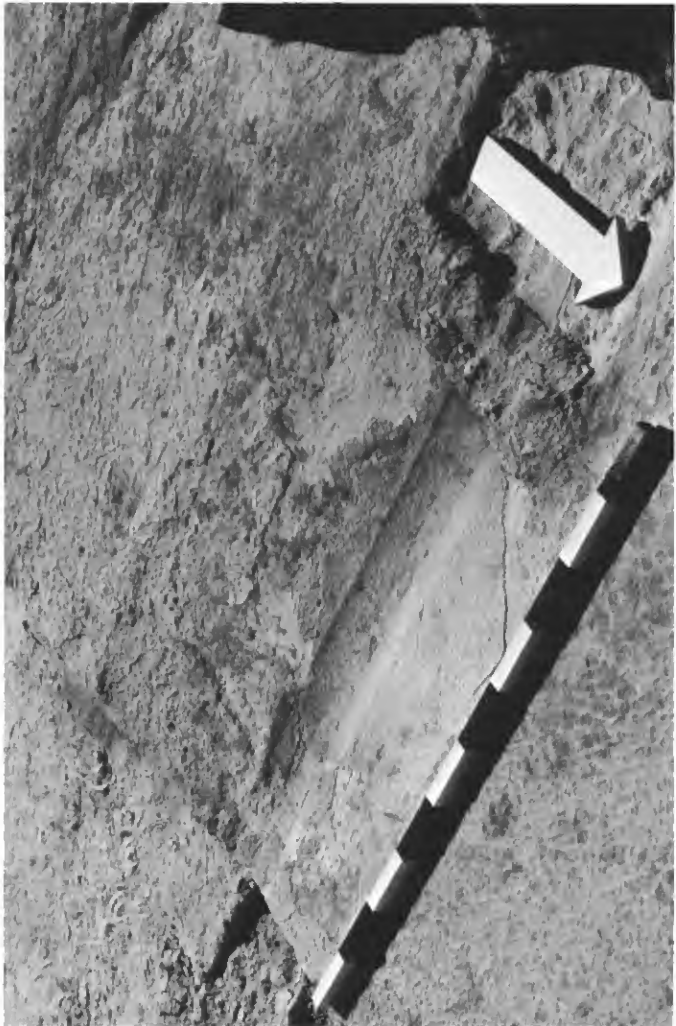
Pl. 46b: Older threshold of entrance into the court of the Ka-pyramid.



Pl. 46d: Older drain systems under northeast corner of Ka-pyramid enclosure wall.  
See fig. 28.



Pl. 46a: Hole around north entrance shaft of Ka-pyramid.



Pl. 46c: Older collecting basin and drain, later blocked with mortar and covered by northern enclosure wall of Ka-pyramid.



Pl. 47a: Round holes in sub-foundation of southwest corner of Ka-pyramid.



Pl. 47b: Small pavement deposit in court of Ka-pyramid. See pl. 98b.



Pl. 47c-d: Pit of unknown purpose in southwest corner of Ka-pyramid enclosure. See pl. 98a.







Pl. 48a: North chamber of Ka-pyramid. See pl. 97.



Pl. 48b: South chamber of Ka-pyramid. See pl. 97.



Pl. 48c: North chamber of Ka-pyramid with secondary entrance corridor. See foldout 5.



Pl. 48d: Fragments of wood found in east chamber of northern entrance shaft of Ka-pyramid.



Pl. 49: Relief fragments of the west wall of the entrance chapel. See p. 80 and the reconstruction pl. 56.



Pl. 50: Relief fragments of the east wall of the entrance chapel. See pp. 79–80 and pl. 53.





Pl. 51: Relief fragments of the north and south walls of the entrance chapel. See pp. 78–79 and pls. 54–55.



Pl. 52a: Excavation of entrance chapel blocks in 1932/1933. See p. 76 and fig. 29.



Pl. 52b: Cornice and torus blocks D 1 and I 3 of entrance chapel. See pp. 81-82 and pl. 101.

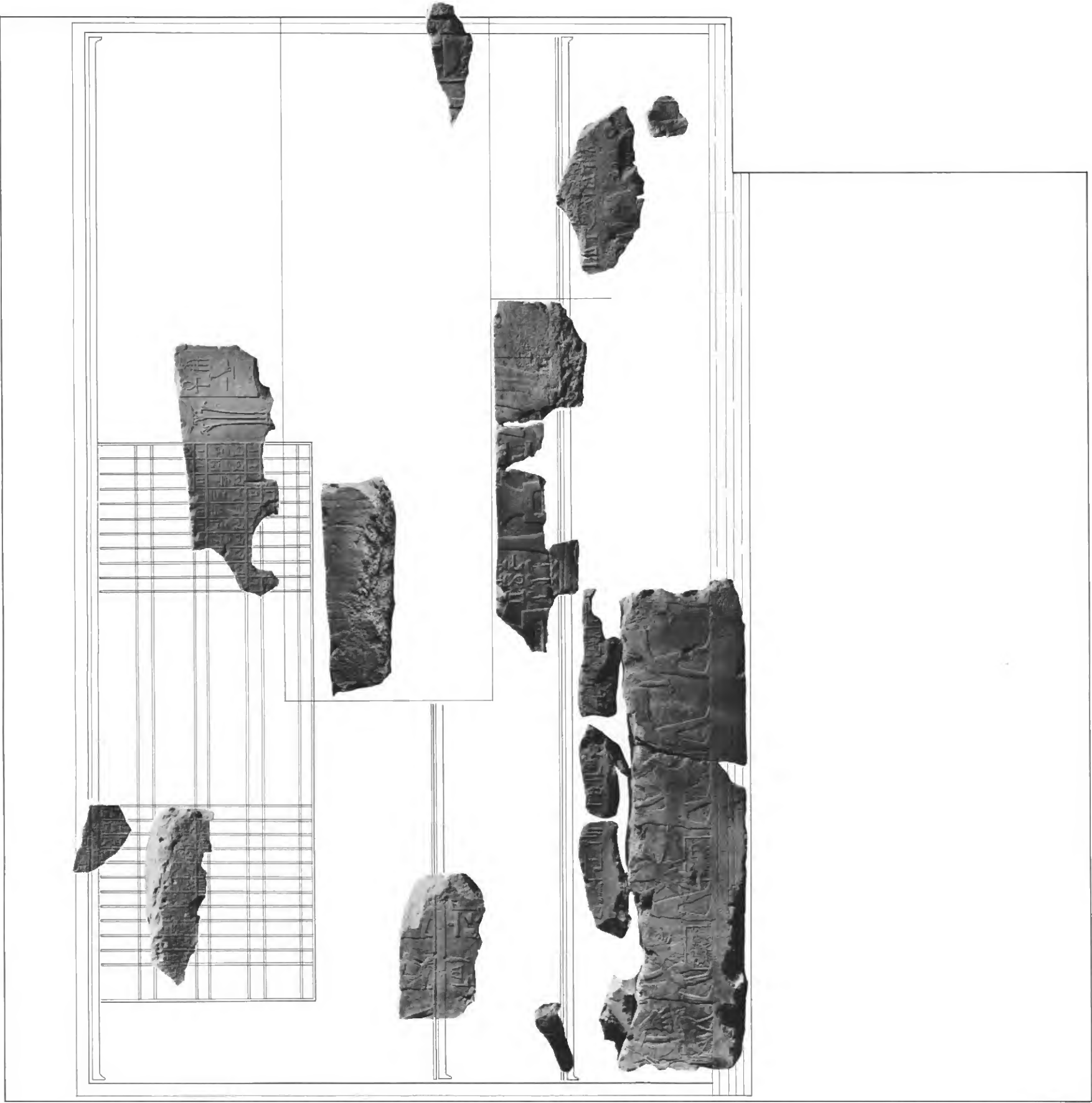


Pl. 52c: Huge block J of entrance chapel. See p. 77 and fig. 30 and pl. 99.

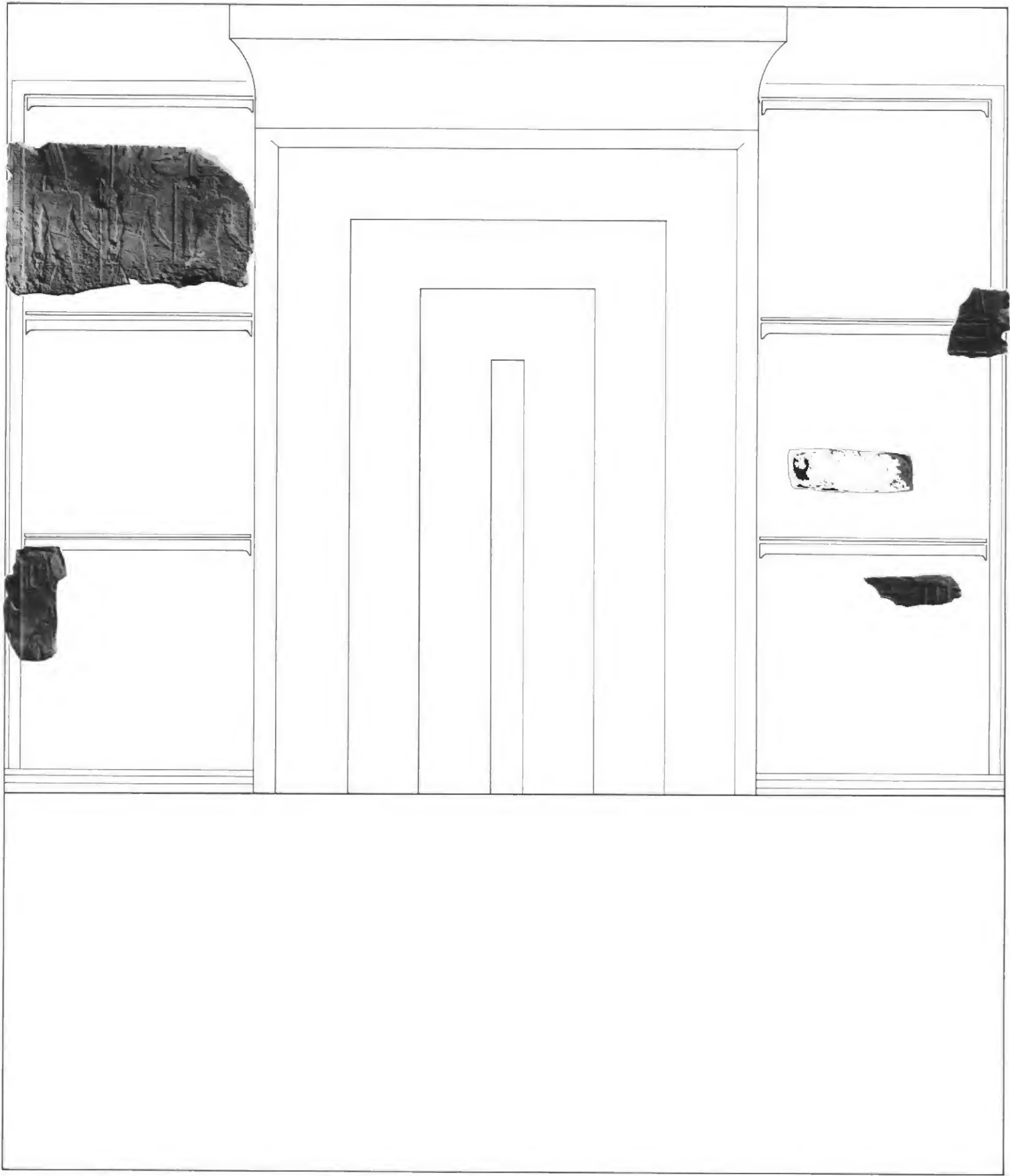


Pl. 52d: Torus block C 1 of entrance chapel. See p. 81 and pl. 100.

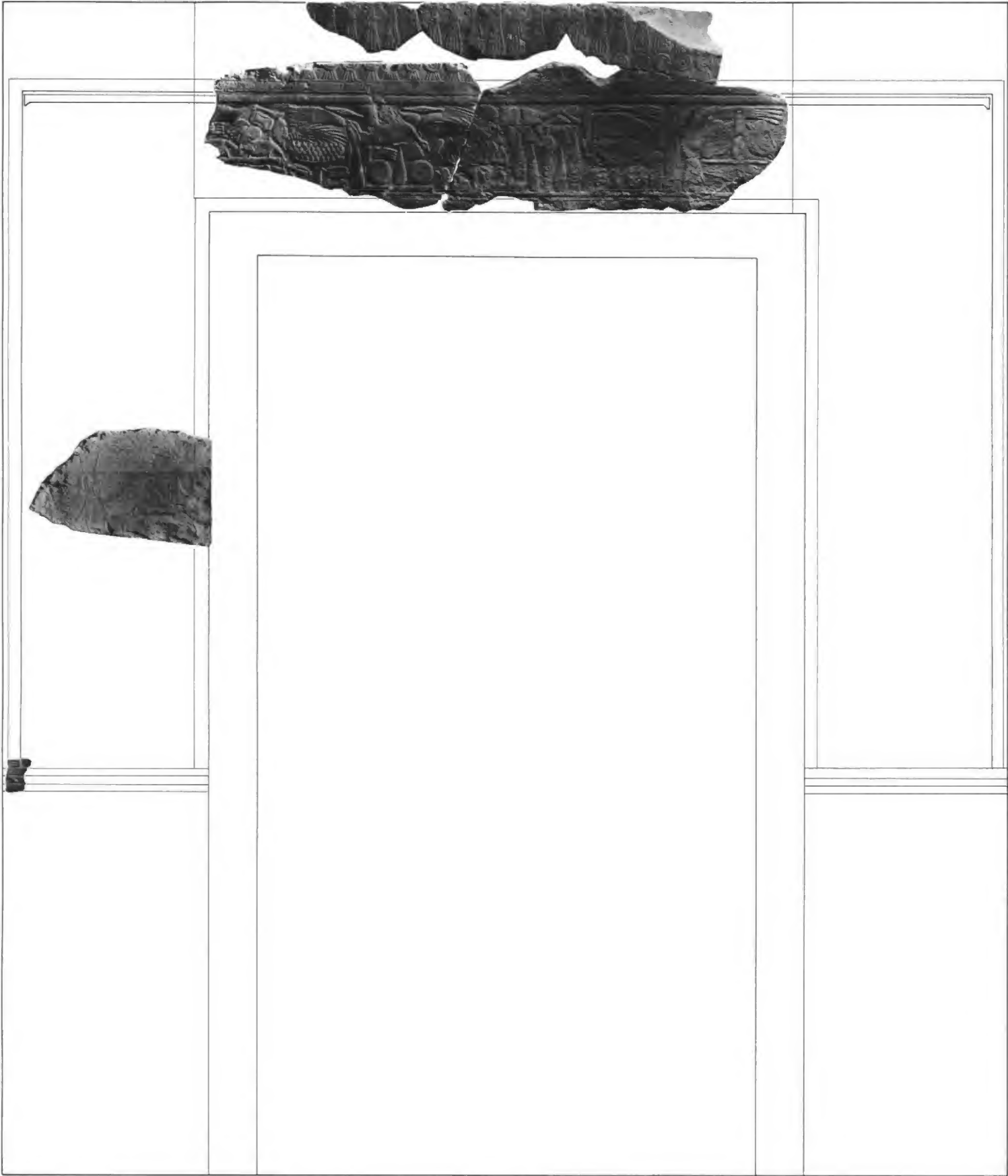




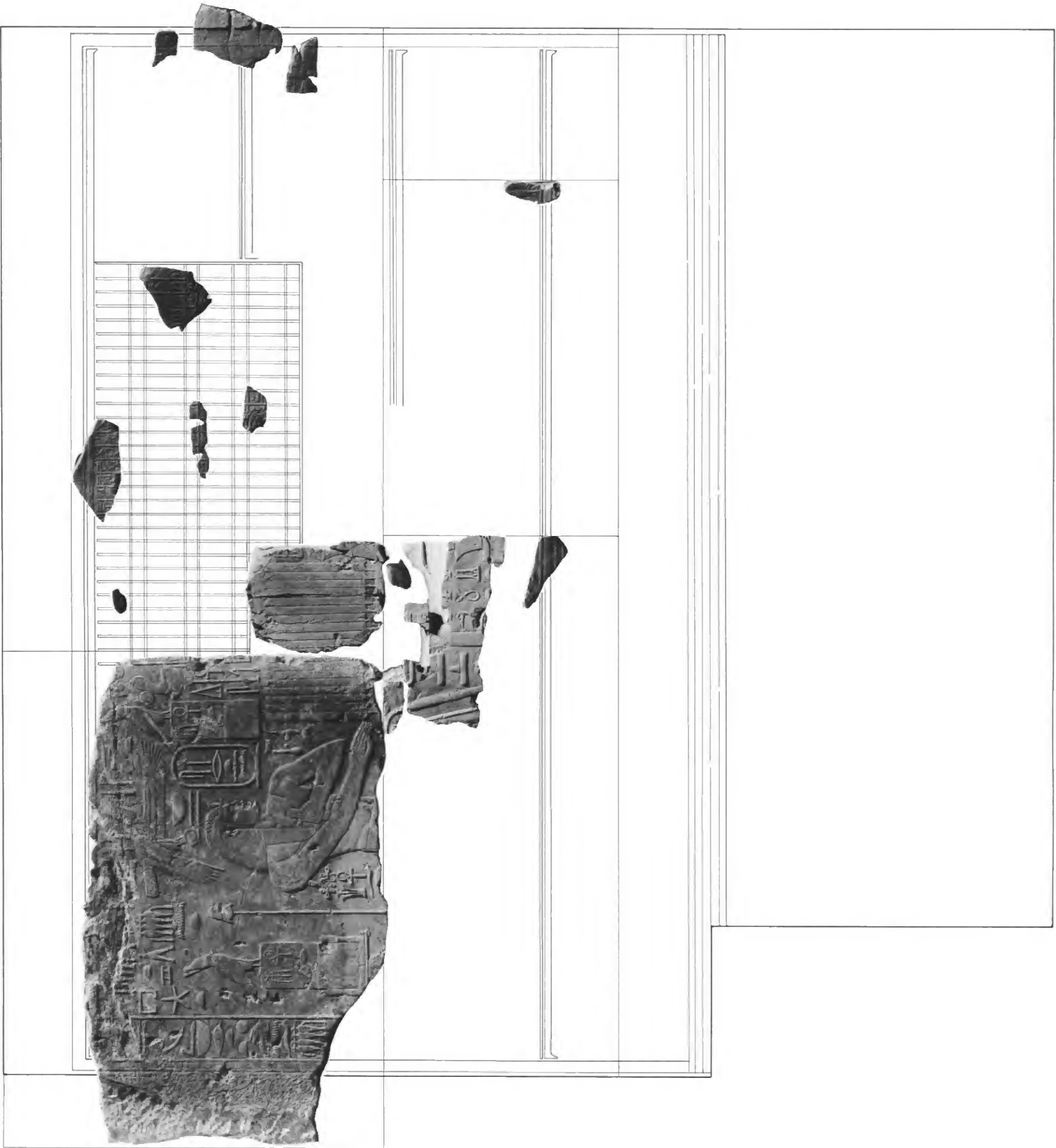
Pl. 53: Reconstruction of the east wall of the entrance chapel.



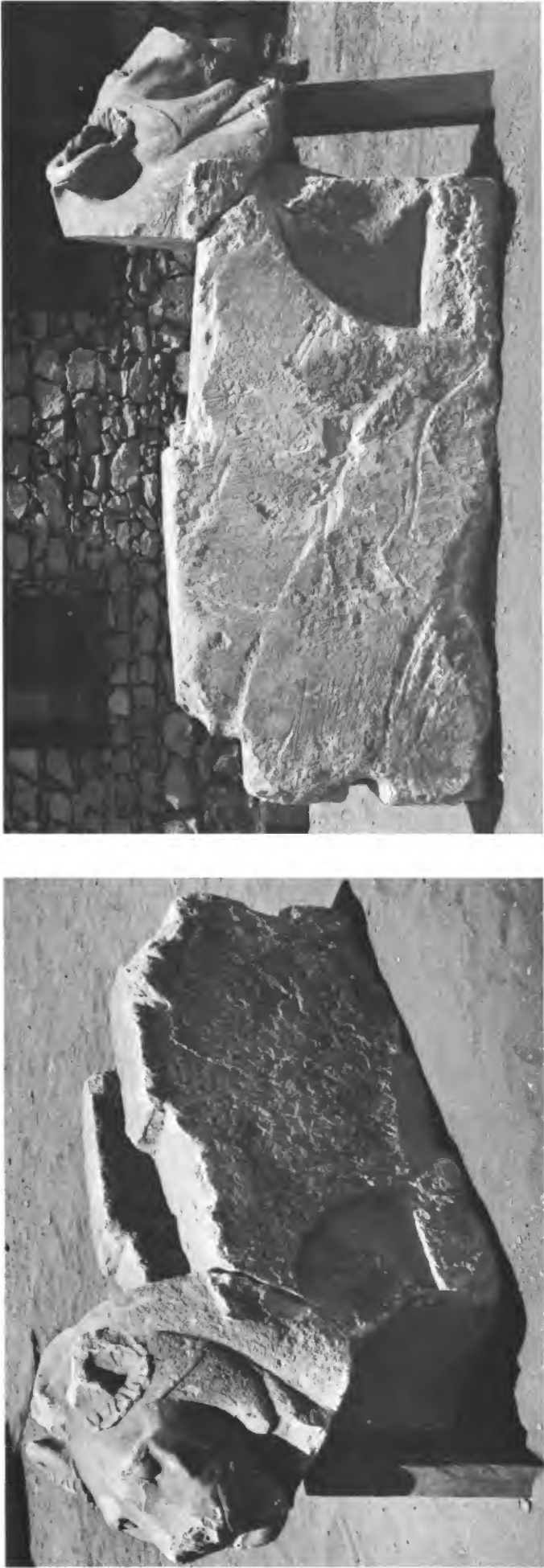
Pl. 54: Reconstruction of the south wall of the entrance chapel.



Pl. 55: Reconstruction of the north wall of the entrance chapel.



Pl. 56: Reconstruction of the west wall of the entrance chapel.



Pl. 57: Lion's-head spout from the west side of the roof of the entrance chapel. Egyptian Museum, Cairo 63 941. See p. 81, fig. 31 and pl. 101.





Pl. 58a: Outlet of drain J into stone-filled area in outer court. See pl. 26a-b.



Pl. 58b: Same, after the excavation 1987.



Pl. 58c: Channel and drain pit of drain F.



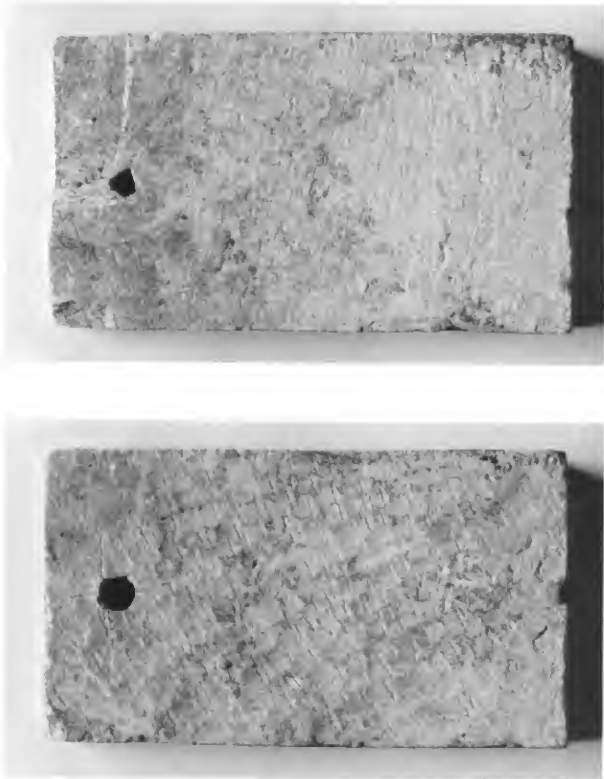
Pl. 58d: French statue pit.



Pl. 59a-b: Drain G. See pl. 103.



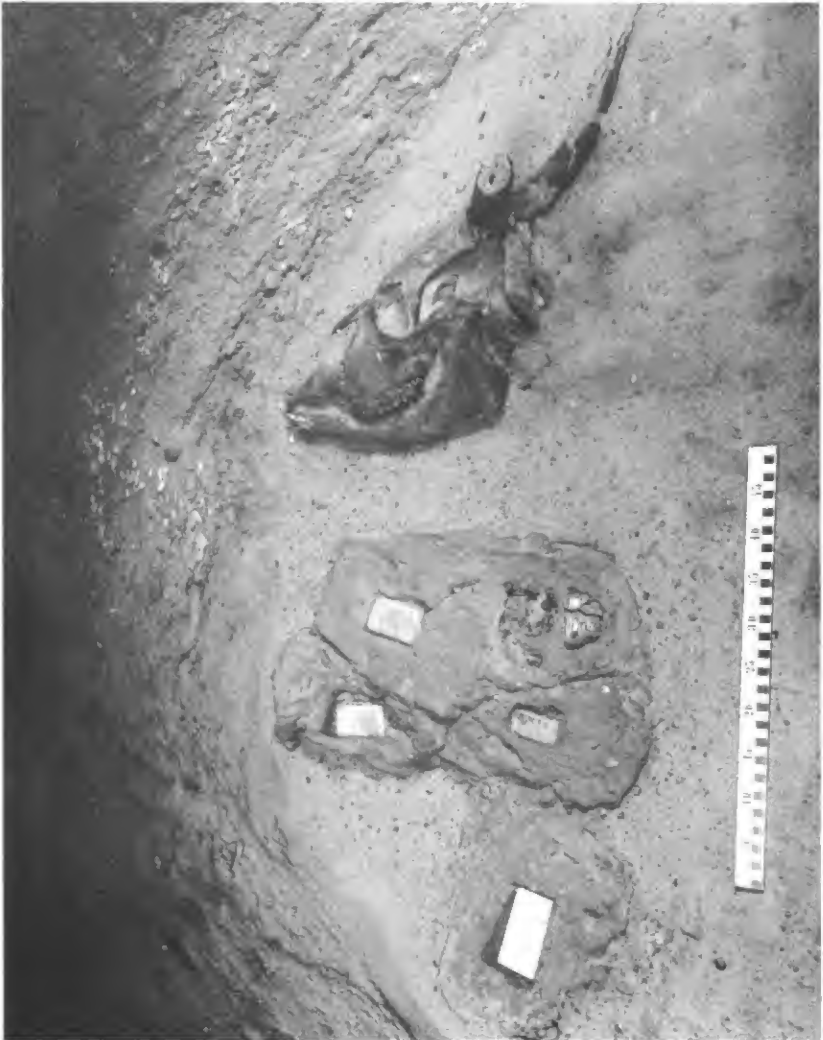
Pl. 59c: Small brick "mastaba" in drain pit G. See p. 85 and pl. 103.



Pl. 59d-e: Limestone slabs from small brick "mastaba."



Pl. 60a-b: Southeast foundation deposit of pyramid of Senwosret I. See fig. 32.



Pl. 60c: The plaques of cedarwood, copper, bronze(?), faience, and alabaster of the southeast deposit. See p. 88 and fig. 37.



Pl. 60d: The pottery of the southeast deposit. See fig. 52.

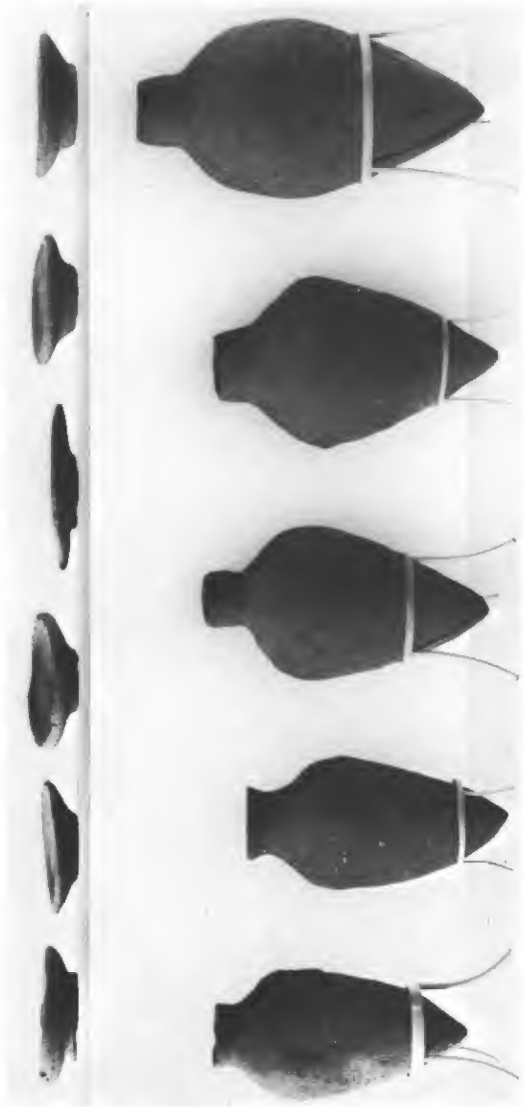




Pl. 61a-b: Southwest foundation deposit of pyramid of Senwosret I. See figs. 33-34.



Pl. 61c: The plaques of metal, alabaster, faience, and cedarwood of the southwest deposit. See p. 89 and fig. 37.



Pl. 61d: The pottery of the southwest deposit. see p. 108 and fig. 53.



Pl. 62a-b: The foundations of the northwest corner of the pyramid of Senwosret I covering the foundation deposit. See p. 89 and pls. 87 and 94.



Pl. 62c: The northwest foundation deposit.



Pl. 62d: The plaques of metal, alabaster, and faience of the northwest deposit. See fig. 37.

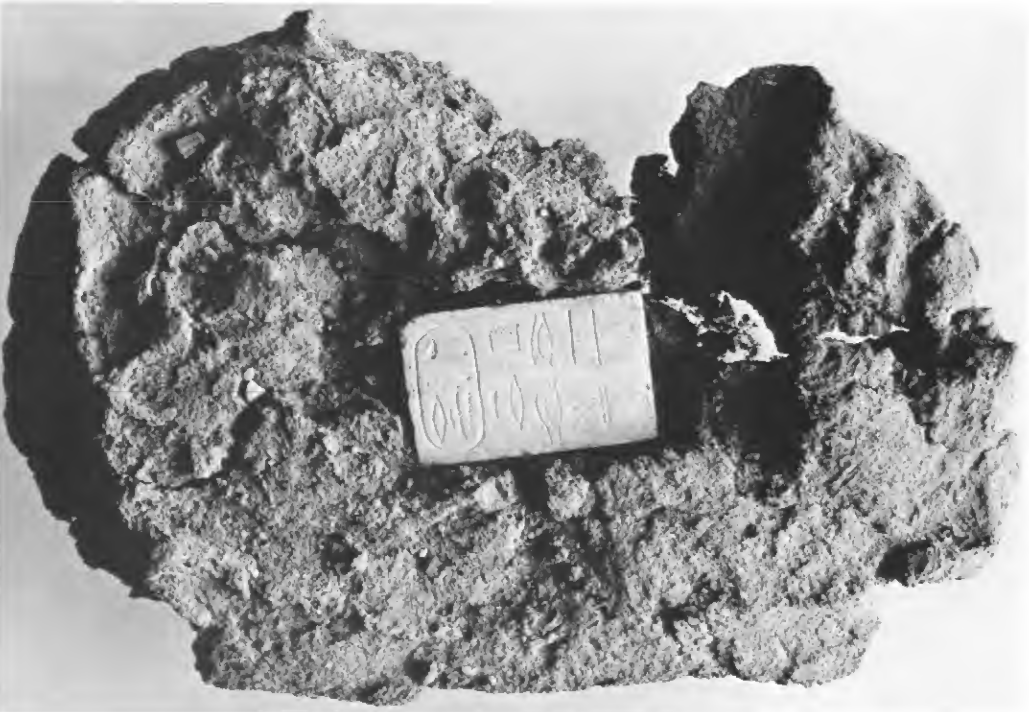




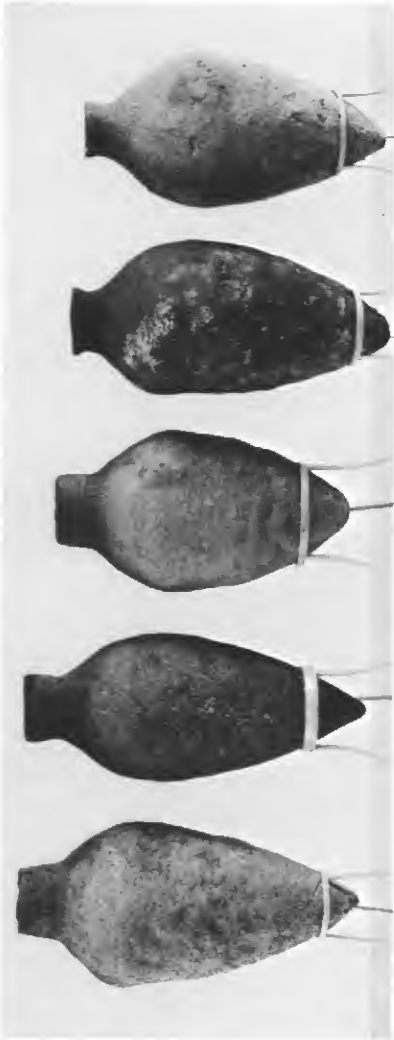
Pl. 63c: The southeast secondary deposit. See p. 90 and fig. 38.



Pl. 63d: The alabaster and faience plaques of the northwest deposit in place in the original bricks. See pl. 62d.



Pl. 63a-b: The alabaster and faience plaques of the northwest deposit in place in the original bricks. See pl. 62d.



Pl. 63d: The pottery of the northwest foundation deposit. See p. 109 and fig. 54.

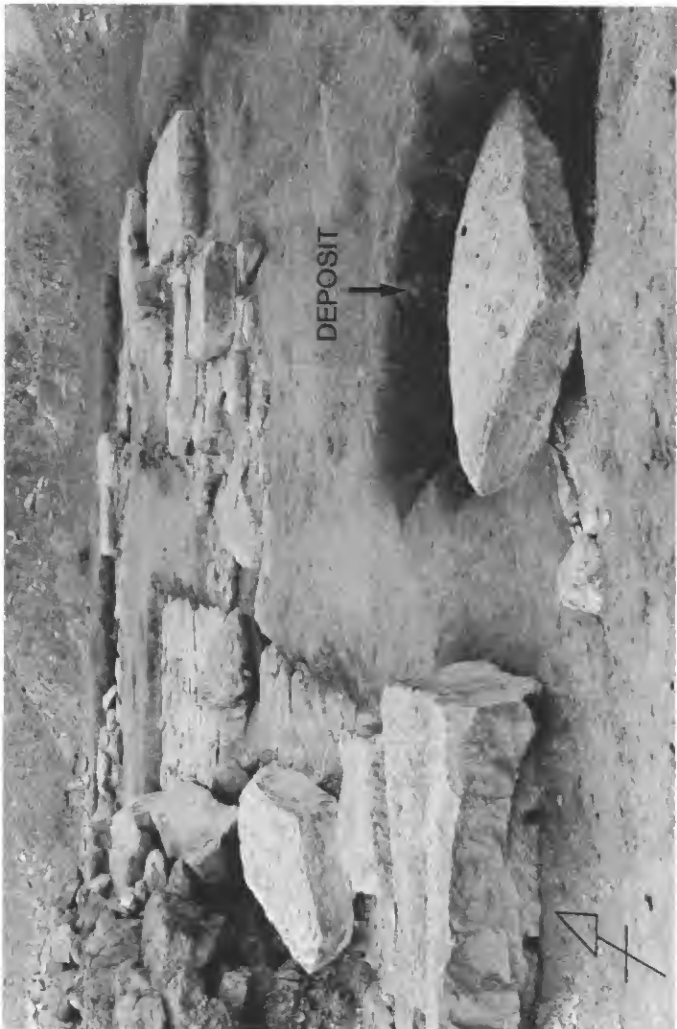




Pl. 64a: The southwest corner of the pyramid, with the secondary deposit. See p. 88.



Pl. 64b: Small pavement deposit opposite the pyramid entrance. See p. 91 and fig. 42.



Pl. 64c: The entrance cut deposit at the southeast corner of pyramid 7 (arrow). See p. 92.



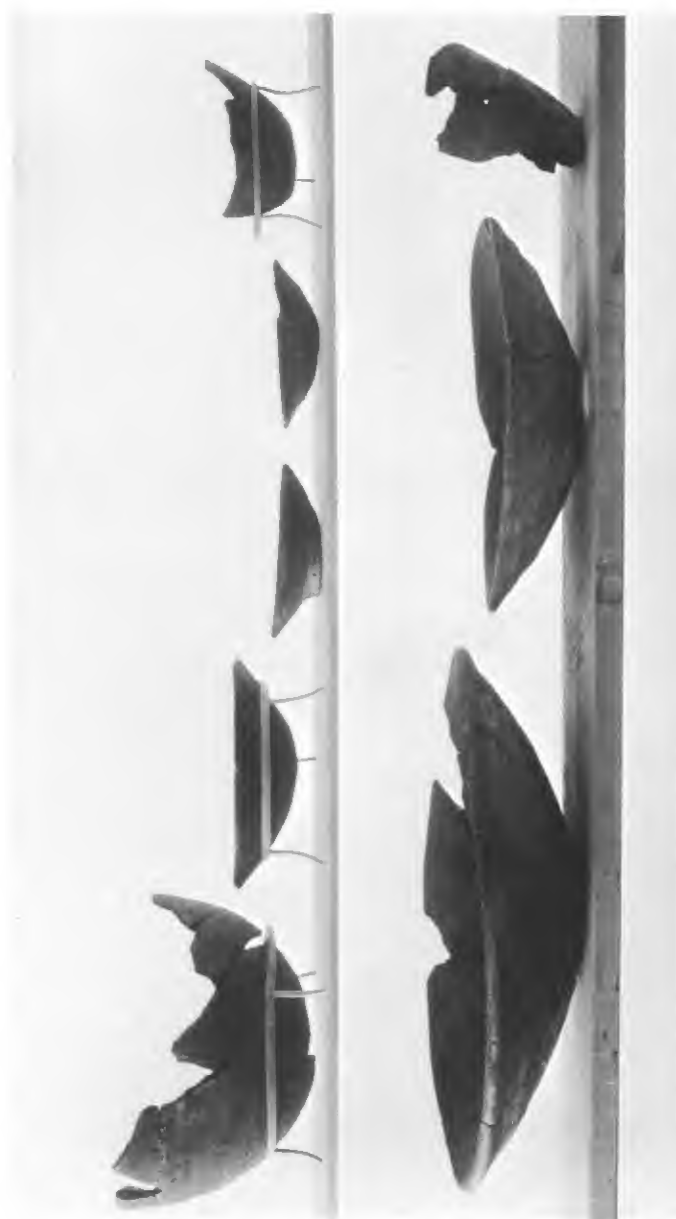
Pl. 64d: The entrance cut deposit. See p. 92 and fig. 39.



Pl. 65a-b: Four jars from the entrance cut deposit. See p. 109 and fig. 55b.



Pl. 65c: Jar from entrance cut deposit.  
See p. 109 and fig. 55b.



Pl. 65d: Pottery from the entrance cut deposit. See p. 105 and fig. 55a.





Pl. 66a: South wall deposit 1. Left foundations of inner enclosure wall. See pp. 112-115.



Pl. 66b: Same, after removal of sand. See fig. 40.



Pl. 66c: Pottery from same deposit.



Pl. 66d: Same, after removal of the contents, revealing central depression. See fig. 41.



Pl. 67a: Hemispherical cup 84/12. See fig. 65.



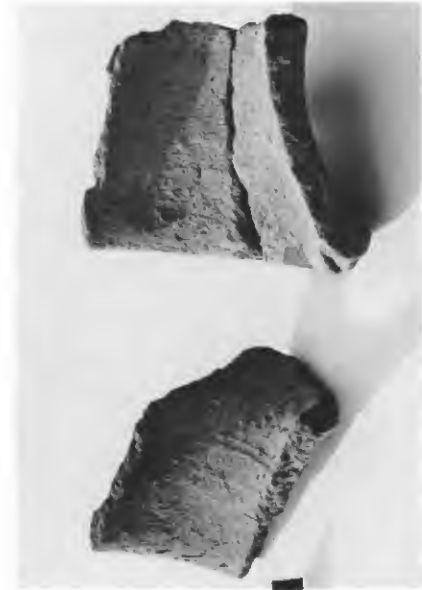
Pl. 67b: Hemispherical cup 84/1. See fig. 65.



Pl. 67c: Neck of large bottle 84/26. See fig. 68.



Pl. 67d: Small jar MMA [12.180.9] found with *shabti* of Bener.



Pl. 67e: Inside views of bottle necks 84/25 and 84/46. See figs. 68, 69.



Pl. 67f: Jars MMA [14.3.71-14.3.73] found with *shabti* of Wahnoferhotep.





Pl. 68a-c: Remains of temple inventory in stone. See pp. 94-98 and figs. 43-44.



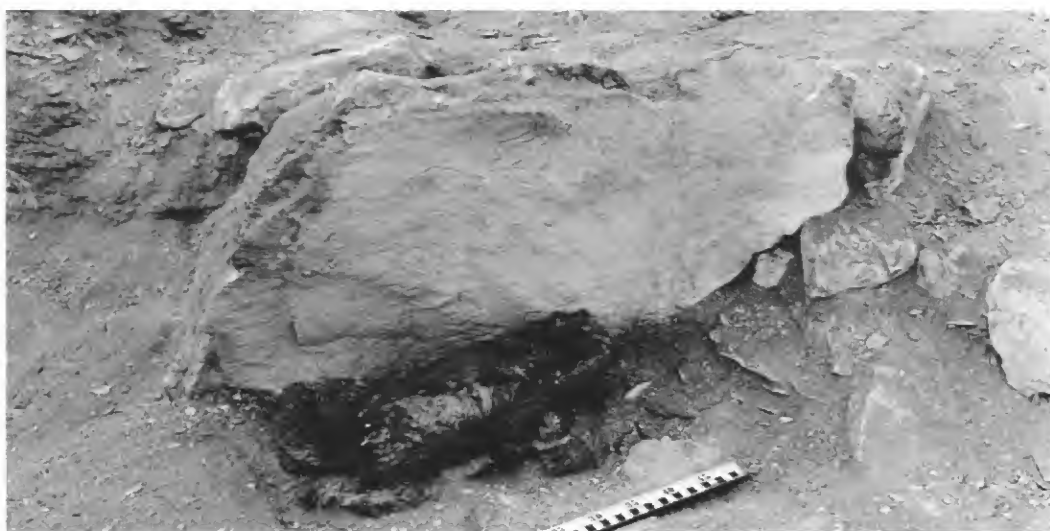
Pl. 69a: Statuette of Senwosret, MMA 24.1.72. See fig. 45.



Pl. 69b: Fragment of a life-size statue p. 97, no. 3.11.



Pl. 69c: Remains of temple inventory in stone. See p. 98 and figs. 43–44.



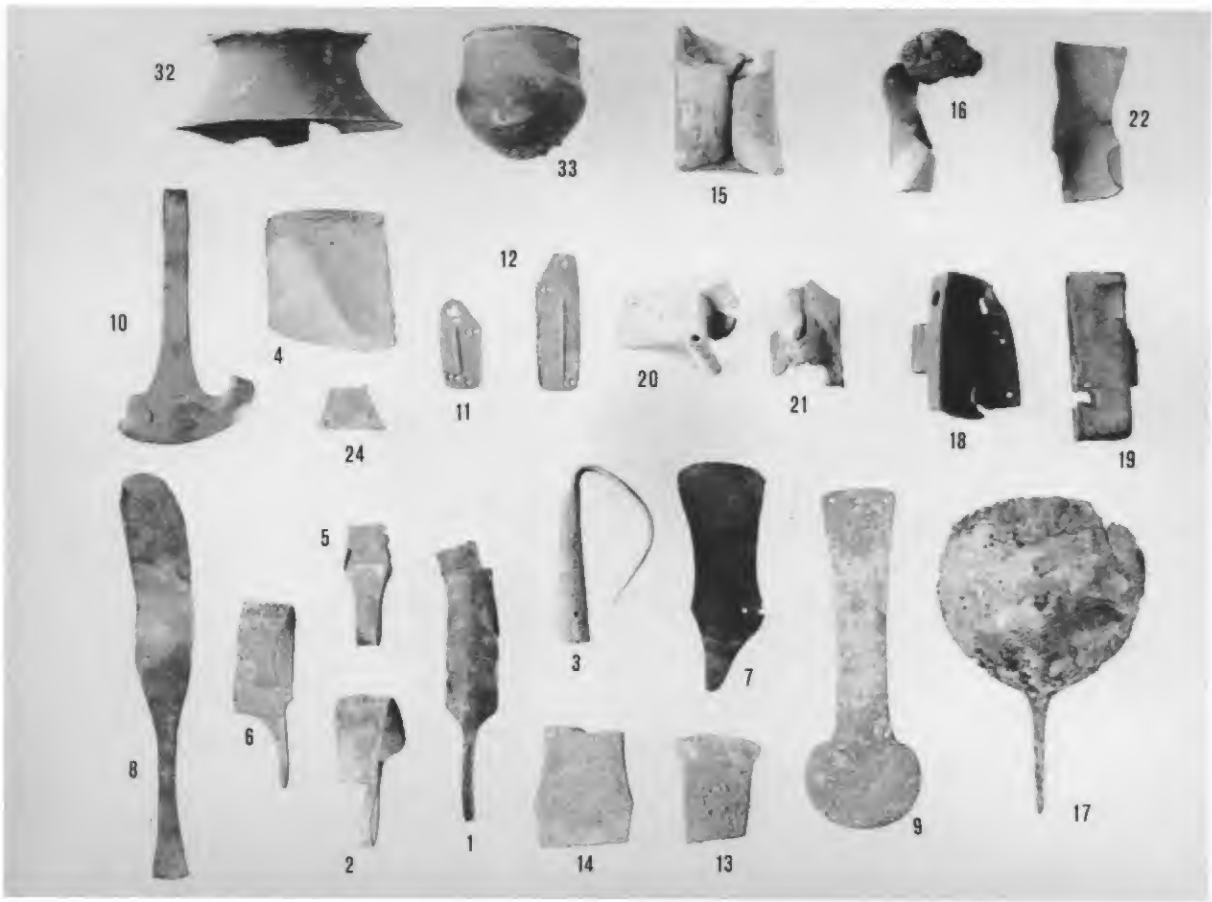
Pl. 70a: Position of the bronze hoard. See p. 99 and fig. 48.



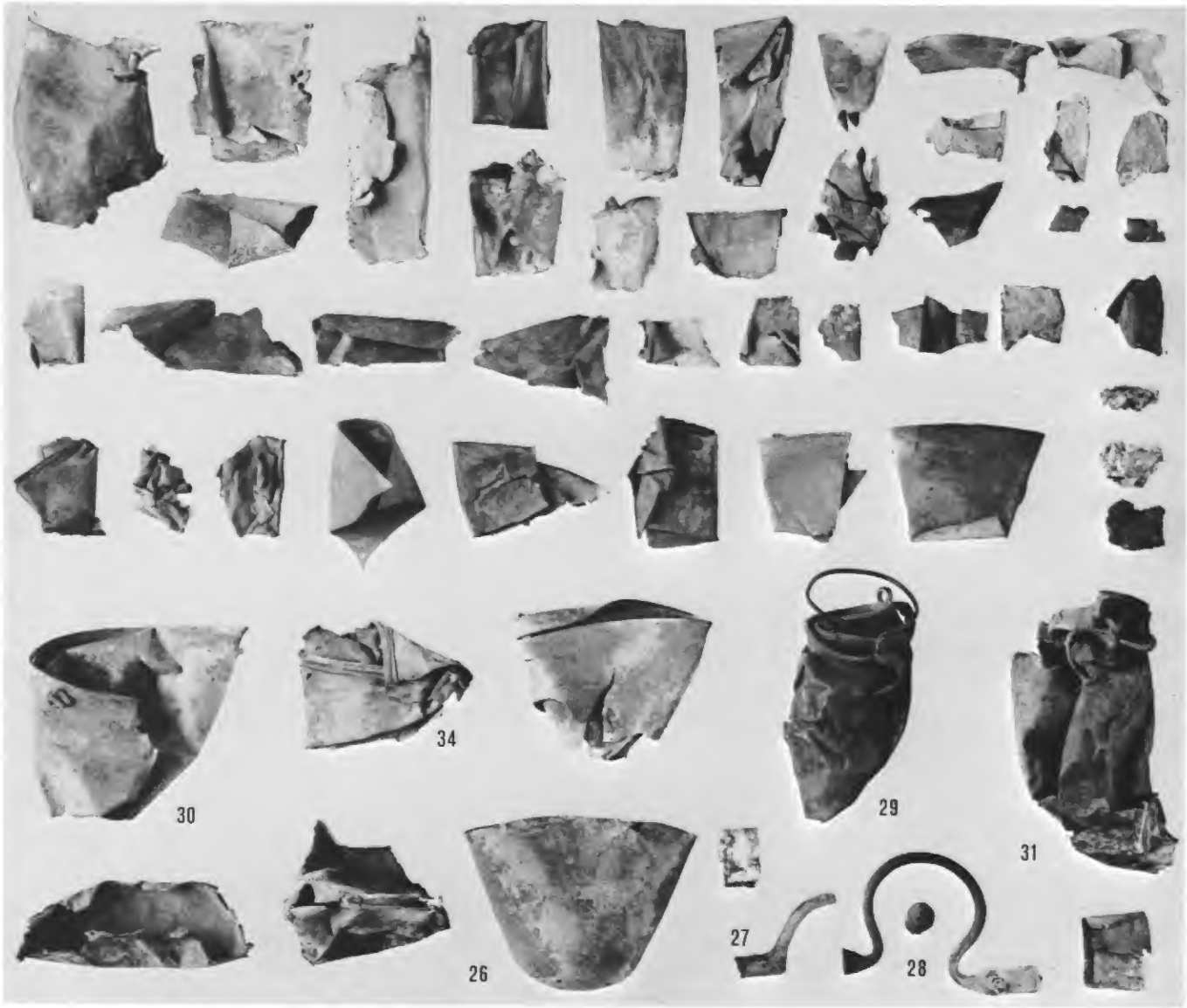
Pl. 70b: The bronze hoard after opening of the bundle.



Pl. 70c: The basket and the sealed linen of the bronze hoard.



Pl. 71a: The bronze hoard. See pp. 99–105 and figs. 49–51.



Pl. 71b: The bronze hoard. See pp. 99–105 and figs. 49–51.





Pl. 72a: Ring stand MMA 34.1.47. Here no. 32.



Pl. 72b: Dagger-blade MMA [34.1.49]. Here no. 2.



Pl. 72c: Hinge MMA 34.1.59. Here no. 19.



Pl. 72d: Hinge MMA 34.1.60. Here no. 20.



Pl. 72e: Small vessel MMA 34.1.61. Here no. 33.

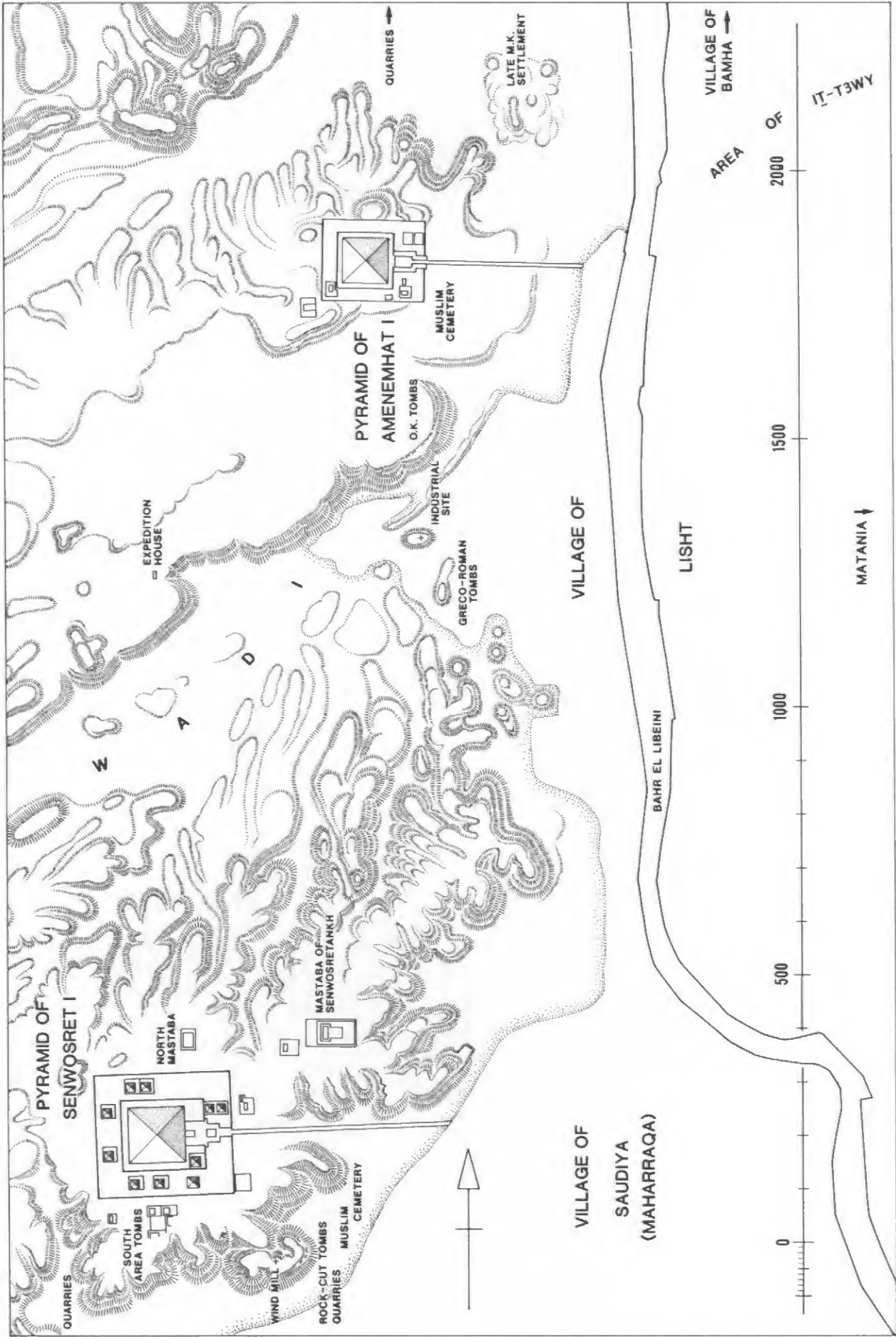


Pl. 72f: Corselet plate MMA [34.1.73]. Here no. 11.

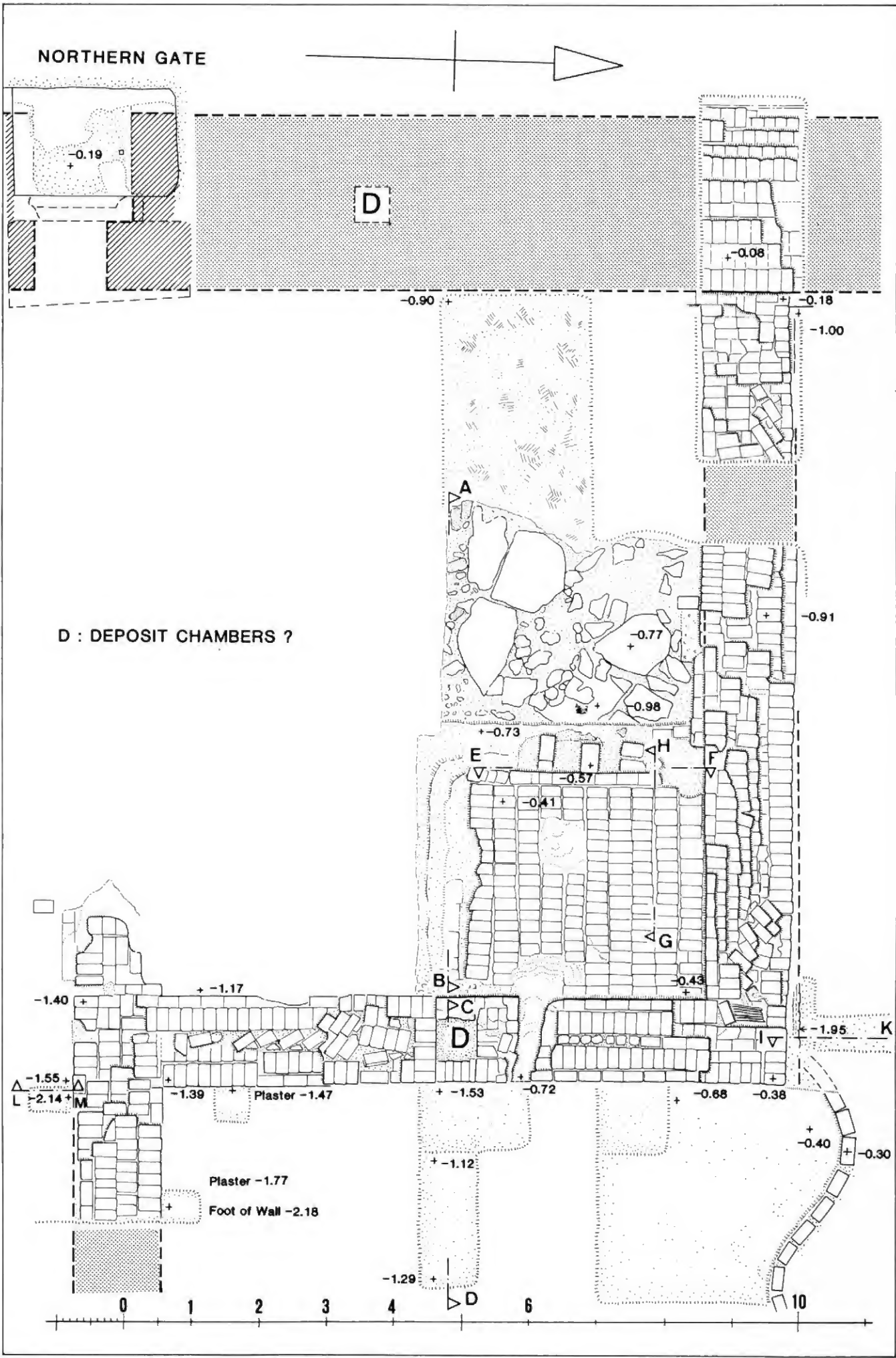


Pl. 72g: Corselet plate MMA 34.1.72. Here no. 12.

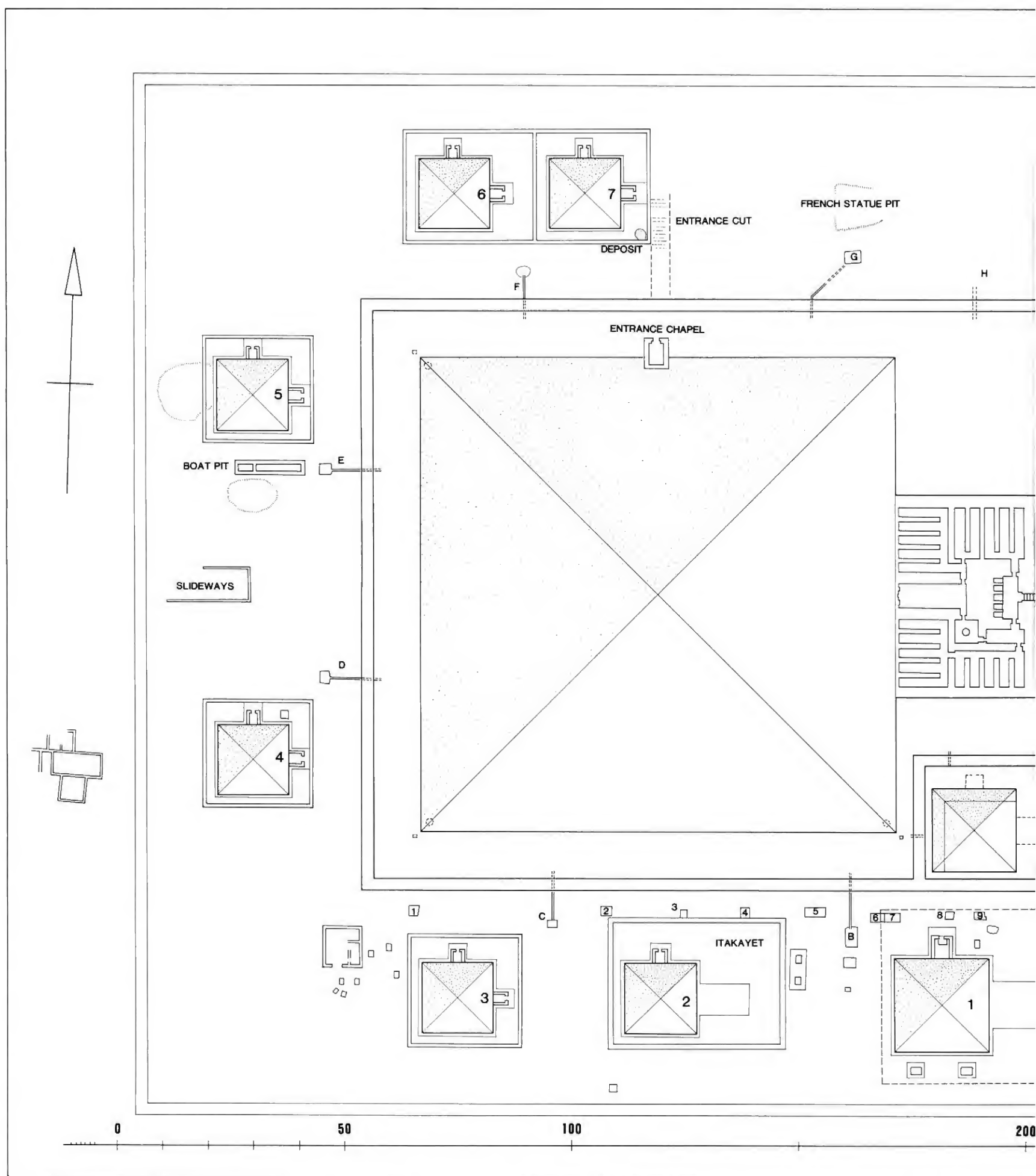




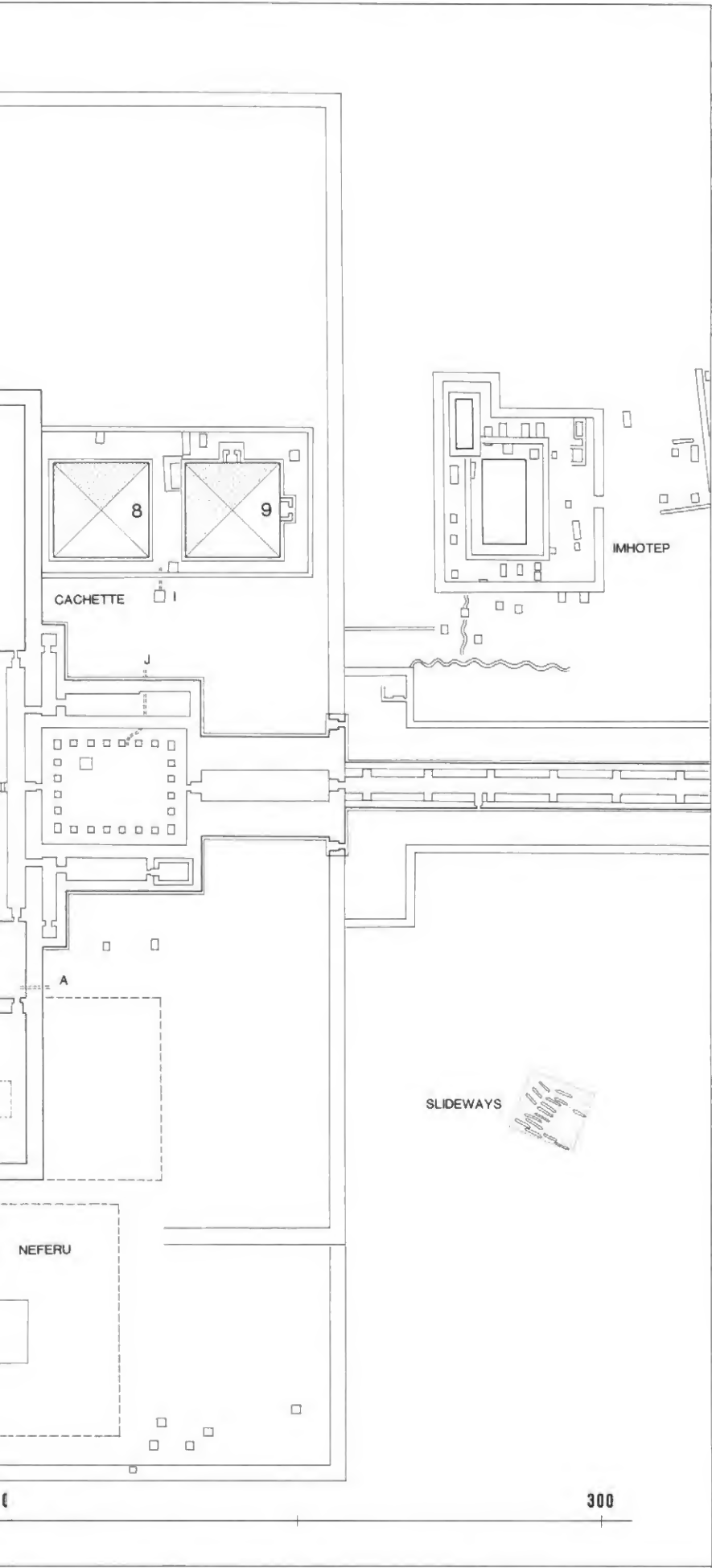
Pl. 73: Map of the north and south cemeteries of Lisht. Scale 1:10,000.

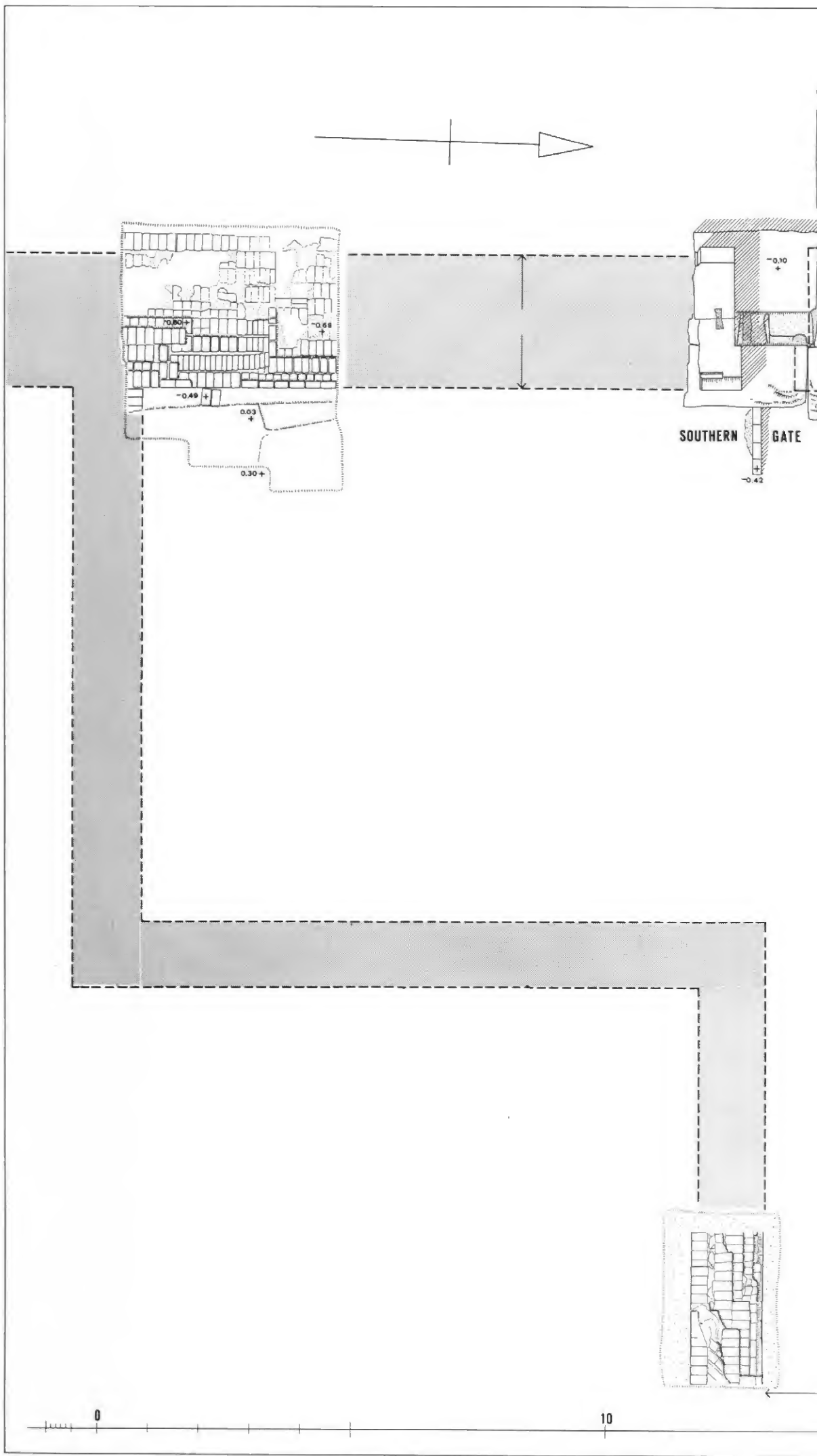


Pl. 74: Plan of upper end of northern causeway lane. Scale 1:75.



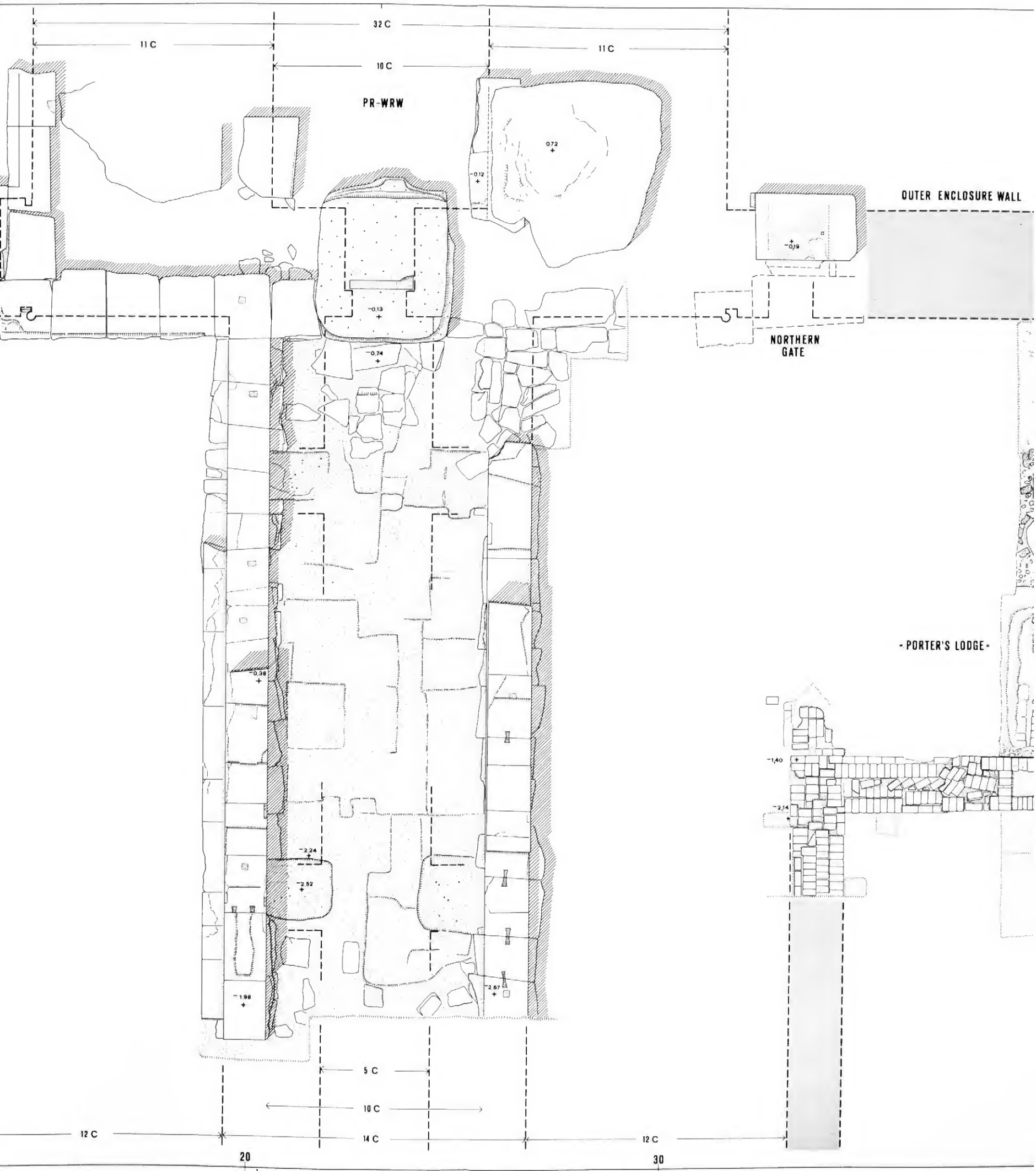
Pl. 75: Map of the funerary complex of Senwosret I. Scale 1:1000.

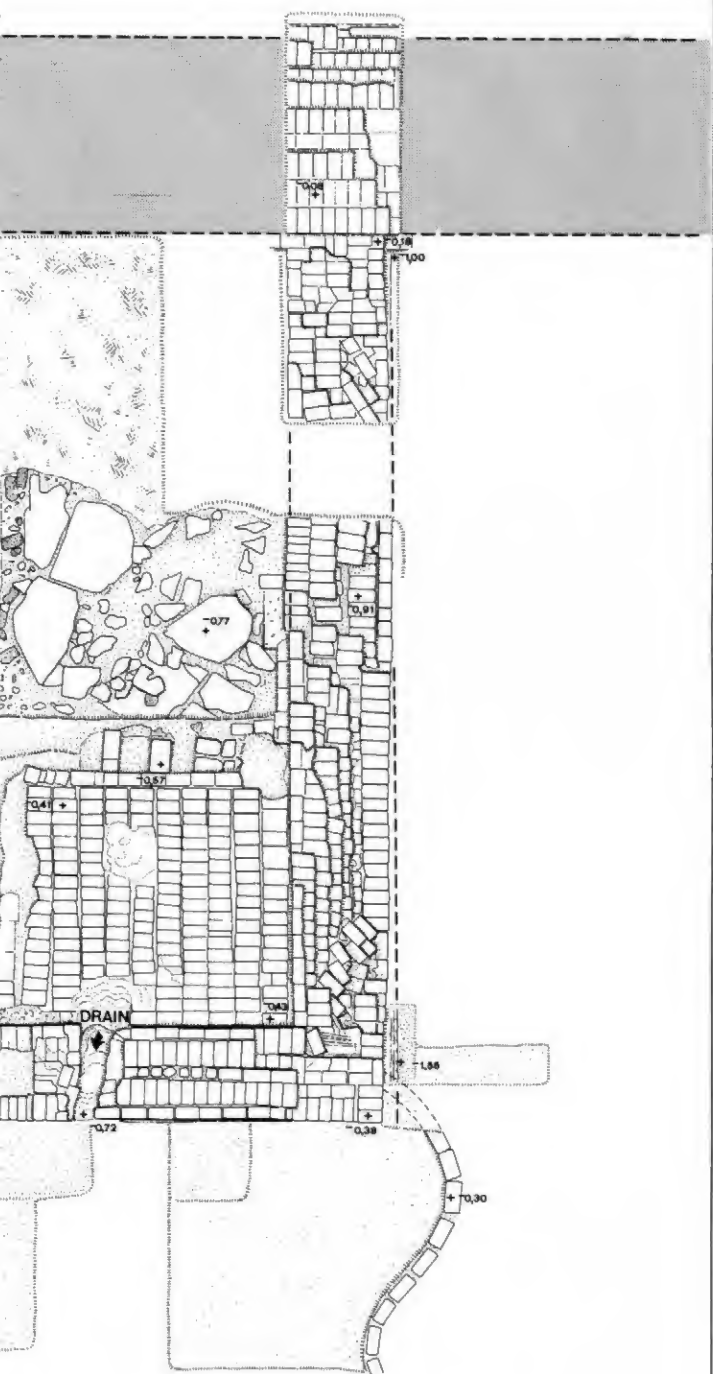


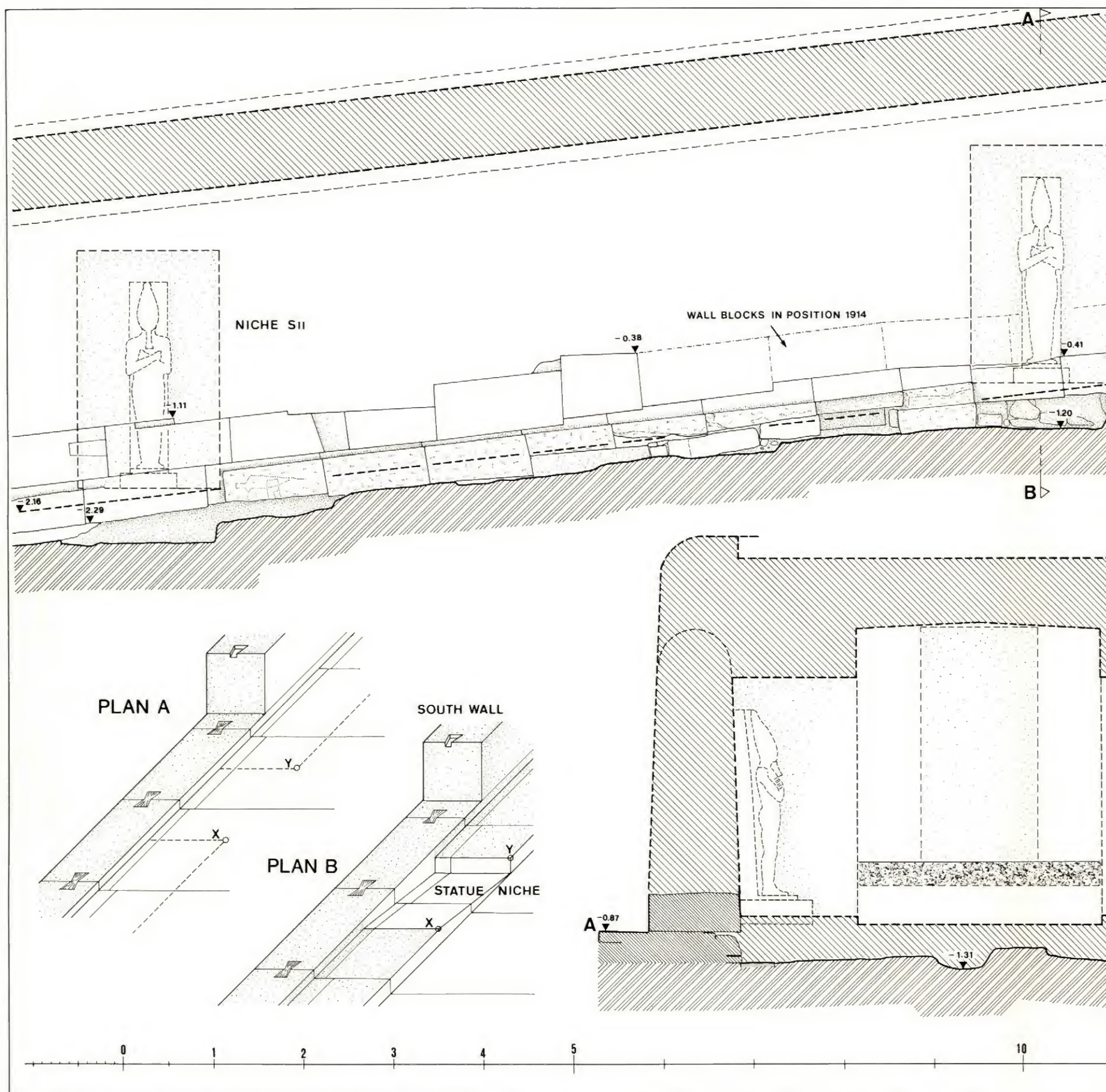


Pl. 76: Plan of upper end of the causeway. Scale 1:100.



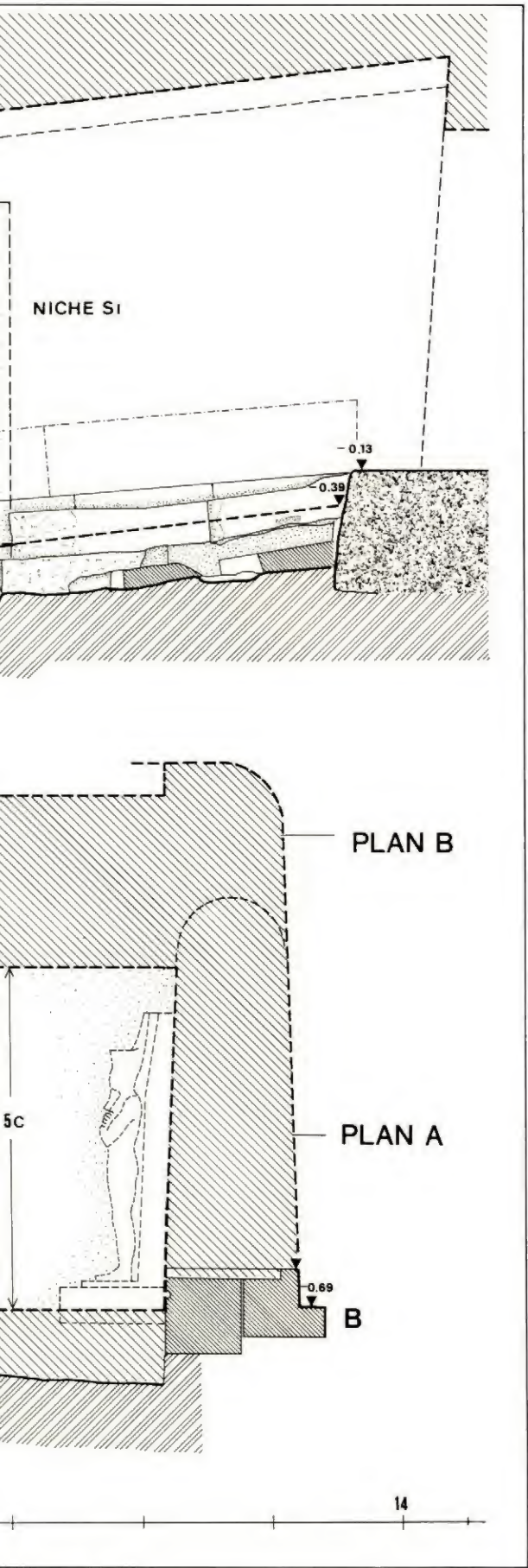


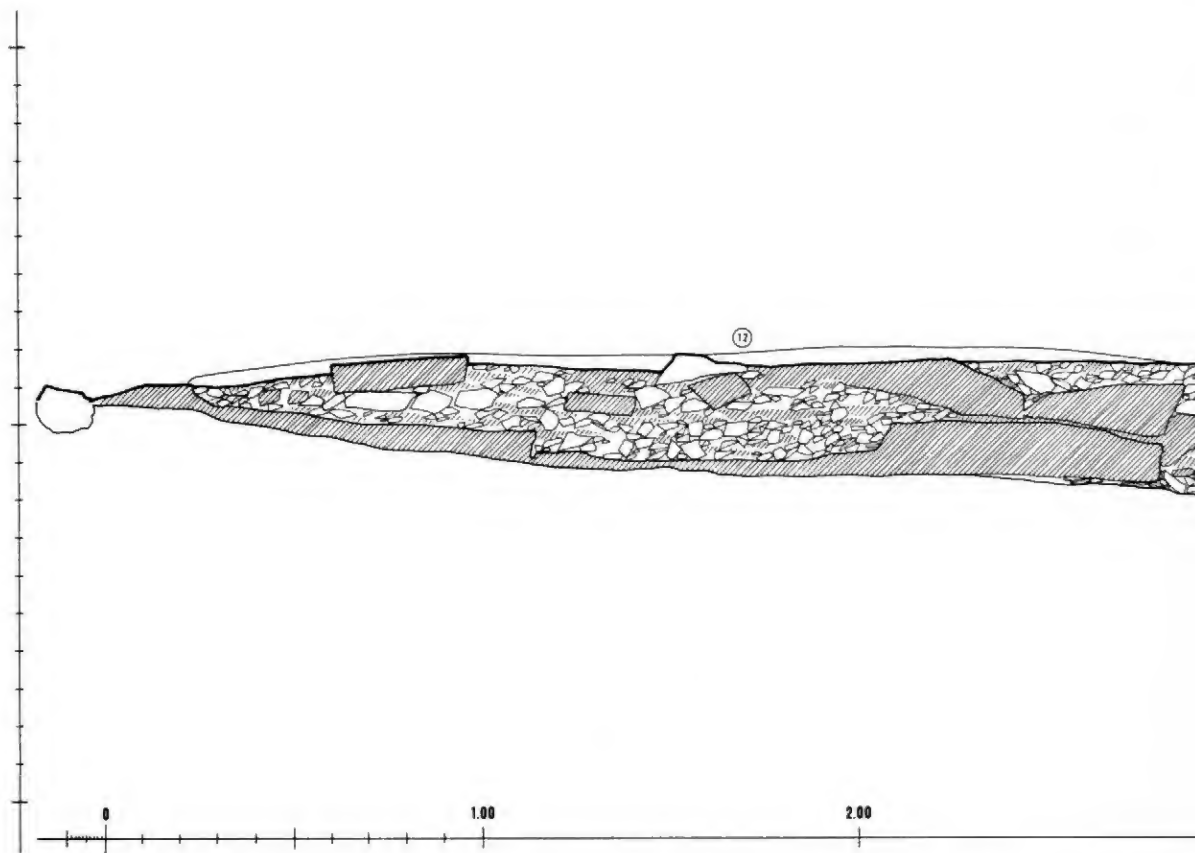




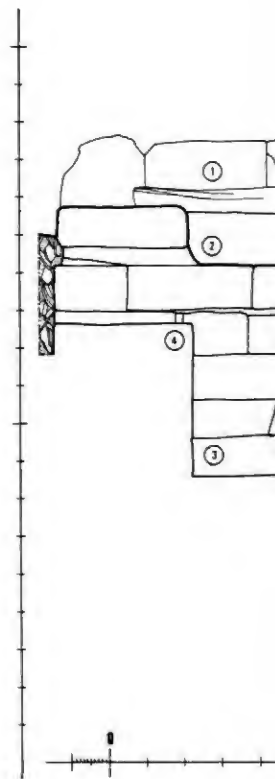
Pl. 77: Sections and details of the upper end of the causeway. Scale 1:50.





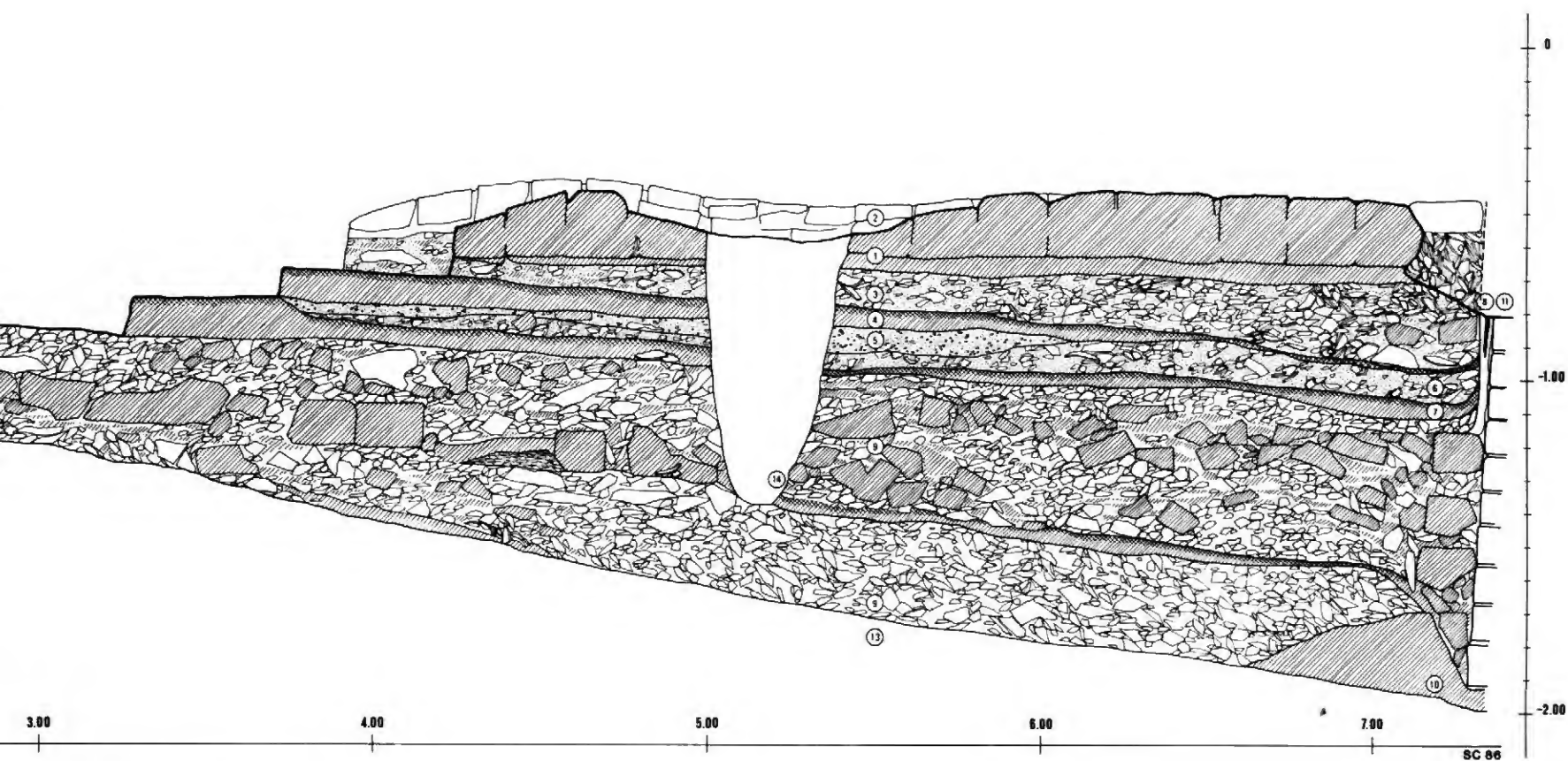


Pl. 78a: Section A-B through the northern causeway widening. Scale 1:20. 1: Remains of south cabin in background. 3: Fill directly below south wall of cabin consisting of limestone chips and potsherds. 4: Hard Nile mud layer diminishing towards the east = 3 in section E-F [pl. 78a]. 5: Fine, light brown powder and dark green, micaceous, very angular stone particles. 6: Gray sand, some small pebbles. 7: Lower, hard Nile mud layer, again thicker in the west than in the east. 8: Gypsum plaster floor 4. 9: Fill against wall, consisting from bottom to top of limestone chips, limestone fragments, and larger brick fragments directly west of wall, and in the area west of the cabin. 10: Very hard, light brown mud. 11: Brick causeway wall east of widening. 12: Large limestone slabs in background forming a wall. 13: Rock.

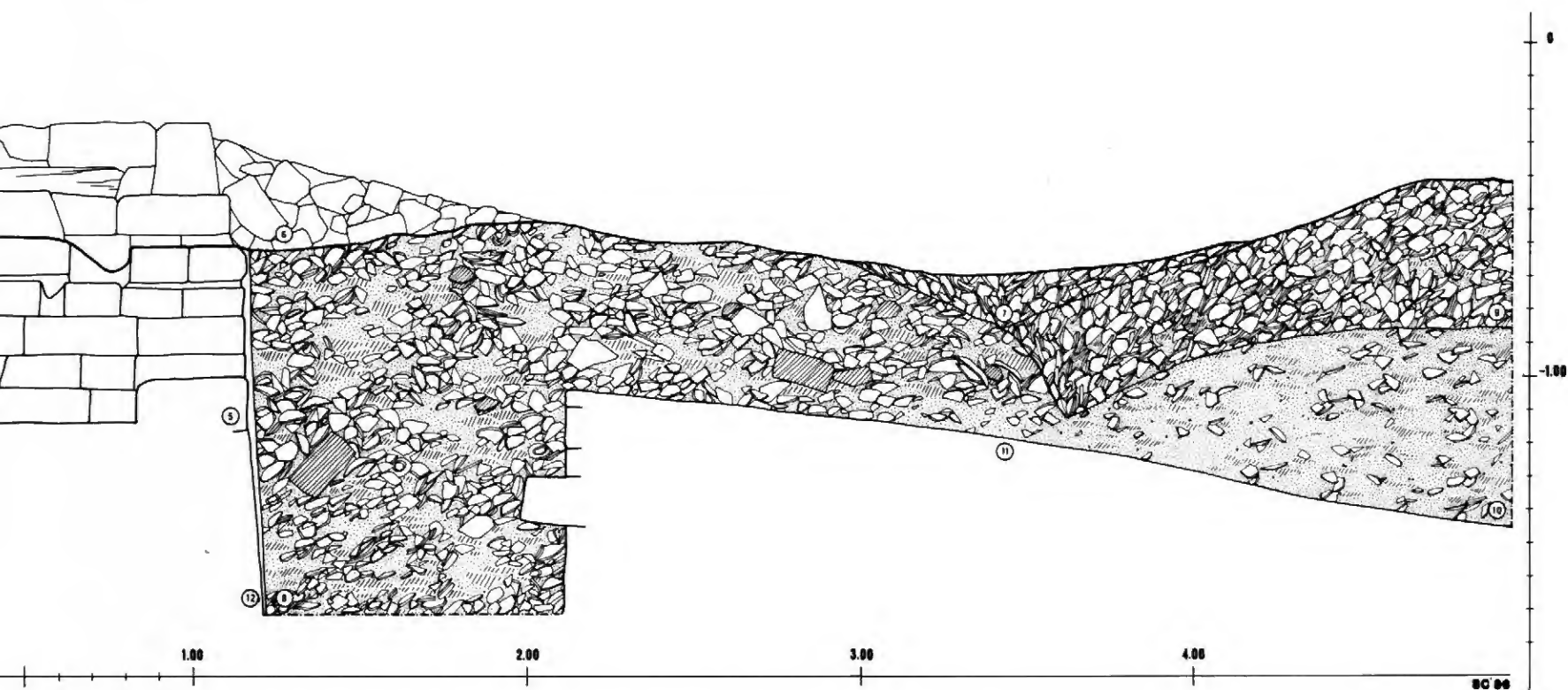


Pl. 78b: Section C-D through the northern causeway widening and the dump. 1: Remains of south cabin in background. 2: "Hidden" wall, coarse brickwork. 3: "Hidden" wall, coarse brickwork. 4: "Hidden" wall, coarse brickwork. 5: "Hidden" wall, coarse brickwork. 6: "Hidden" wall, coarse brickwork. 7: "Hidden" wall, coarse brickwork. 8: "Hidden" wall, coarse brickwork. 9: Tightly-packed brickwork with charcoal and pottery fragments.

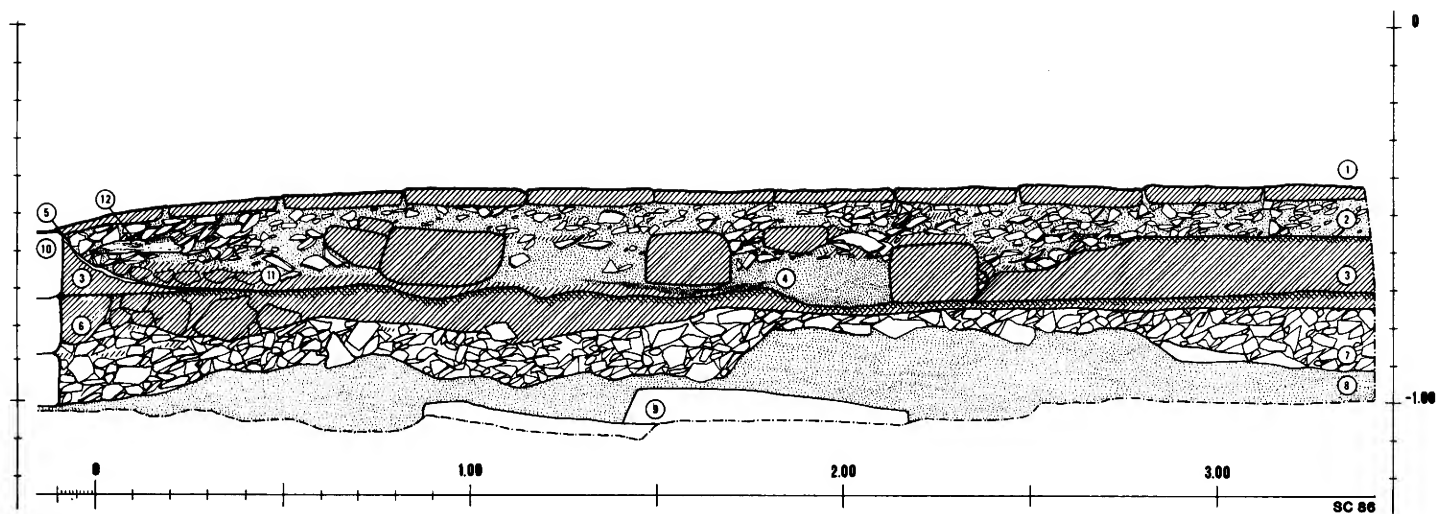




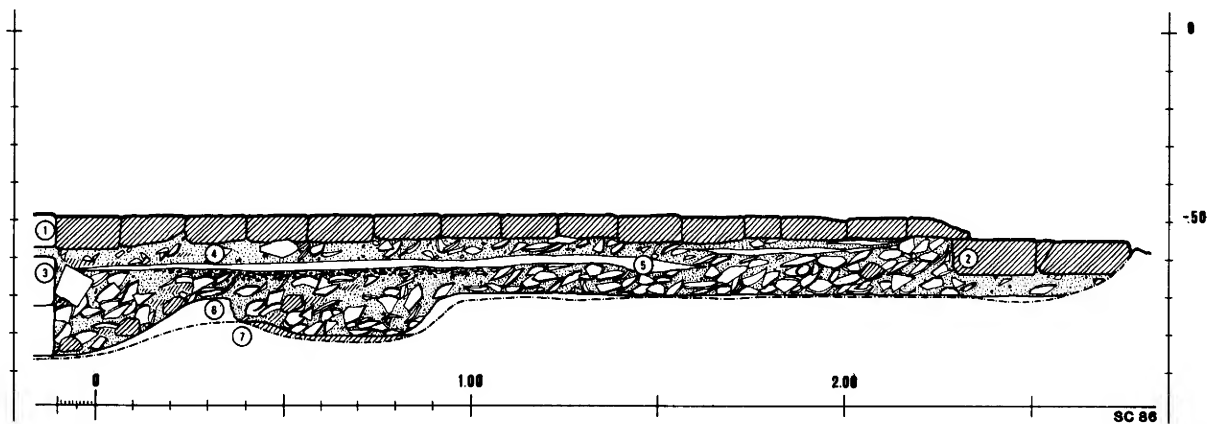
wall of cabin. 2: Pavement of  
 chips, gray sand and dust, and  
 79a] 5: Bed of fine blue  
 all sherds and limestone chips.  
 ster on wall, in two layers above  
 mixed with broken brick,  
 hard Nile mud "mortar."  
 ning the subfoundation of the



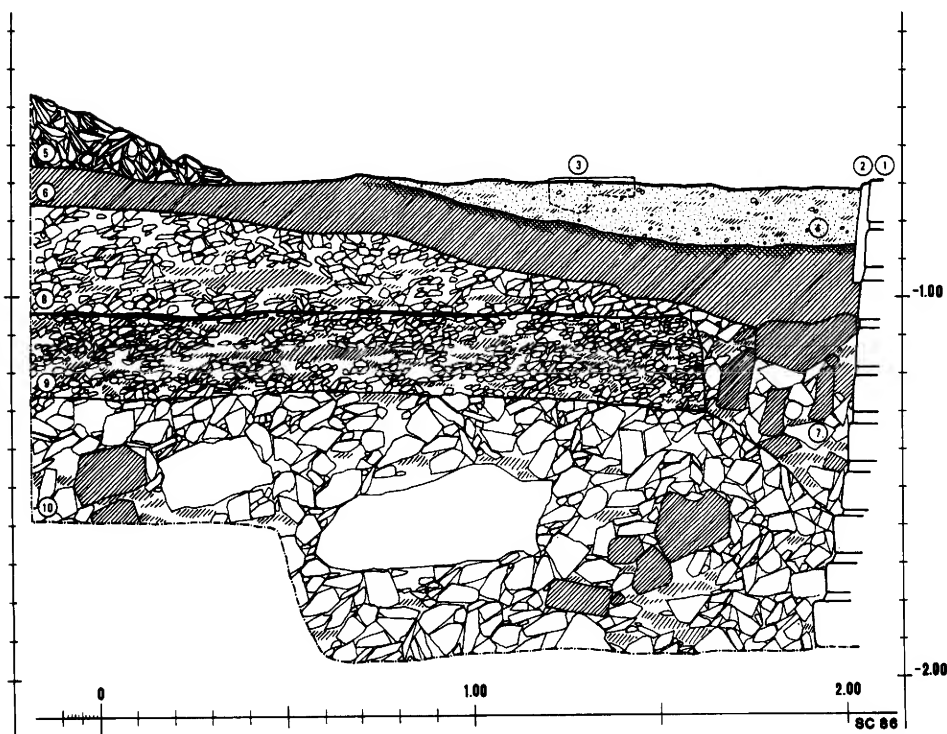
D through the east wall of the causeway widening, the water receptacle, the hard floor east of the cabin,  
 mp heaps in the area. Scale 1:20. 1: East wall causeway widening. 2: Bricks bordering drain channel.  
 chamber" inside wall. 4: Blocking on west side of "Hidden chamber." 5: Mud accretion on east face of  
 er than plaster and not whitewashed. 6: Recent debris from destruction of wall. 7: Potsherds filling space  
 mp hills, possibly recent. 8: Debris and potsherds mixed with broken brick and some limestone chips.  
 packed potsherds forming small hill which was visible on the surface. 10: Heap of ashy dark gray powder,  
 d sherds. The layer looks like kitchen refuse. 11: Hard mud stratum of considerable depth.



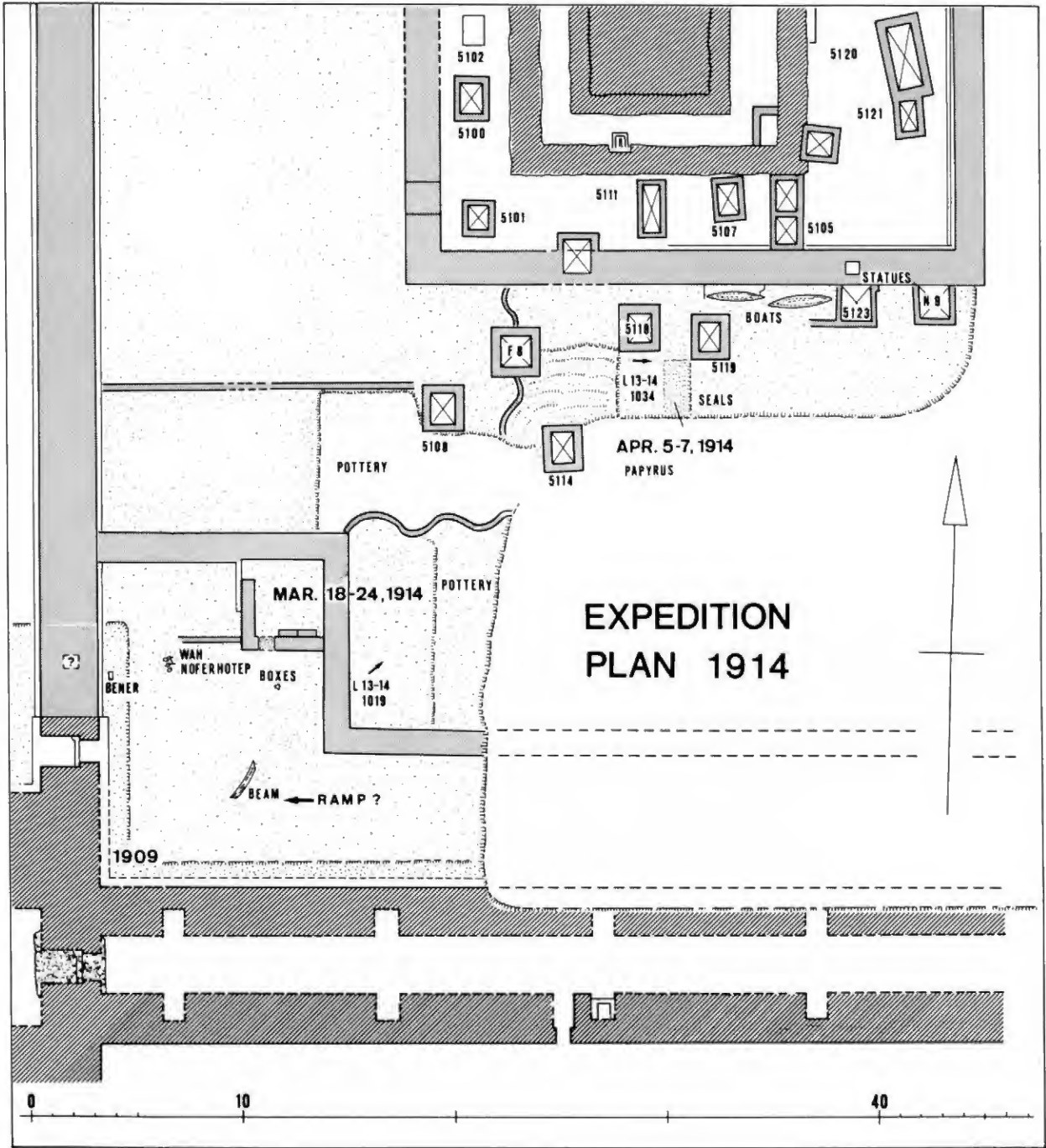
Pl. 79a: Section E-F through the strata below the cabin. Scale 1:20. 1: Pavement of cabin. 2: Loose, dark gray dust with small chips of limestone, some sherds. 3: Hard mud layer = floor 4 in section A-B [pl. 78a]. 4: Gray sand covered by charcoal; further west were packed sherds and pots. 5: Gypsum lining. 6: Broken brick under mud floor. 7: Limestone chips underlying the mud floor throughout entire length of section. 8: Yellow sand. 9: Limestone slabs. 10: Northern part of causeway wall. 11: Lumps of gypsum mortar. 12: Fragment of wooden tool embedded in accumulation of potsherds.



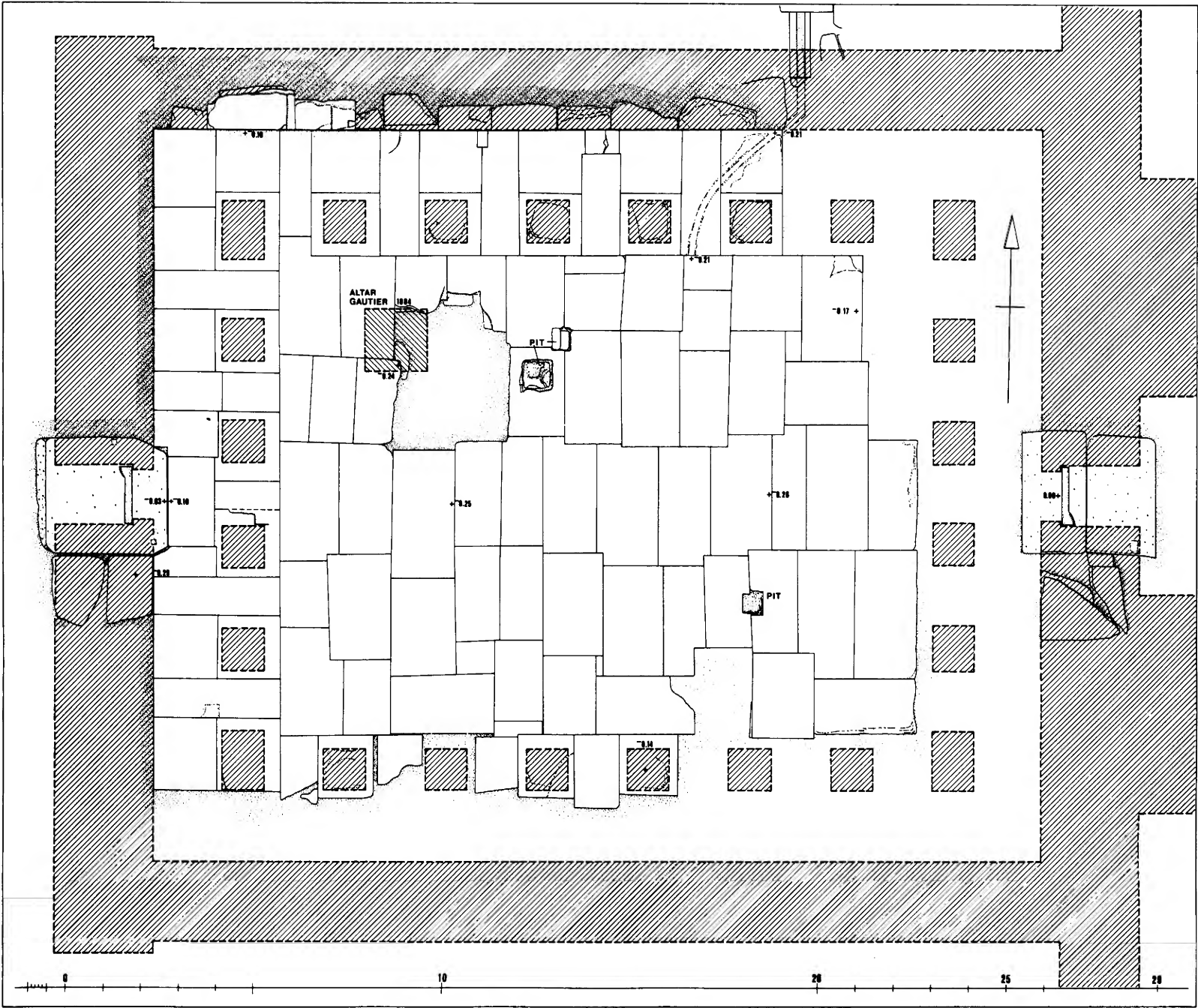
Pl. 79b: Section G-H through strata below the cabin. Scale 1:20. 1: Pavement of cabin. 2: Large brick from row of bricks below pavement. The bricks disappear behind stratum 4, because row runs obliquely. 3: Small wall below pavement. 4: Fill of loose mud and potsherds = 2 in section E-F [pl. 79a]. 5: Zone of more densely packed mud. 6: Gypsum lining of floor, which has been broken through. 7: Mud layer.



Pl. 79c: Section I-K through strata north of the causeway widening. Scale 1:20. 1: Northernmost part of the brick causeway wall north of widening. 2: Plaster on north face of wall, showing the point above which wall face was exposed. 3: Section through remains of wavy wall in background. 4: Layer of gray sand and loose mud. 5: Sherd mound, southernmost preserved portion of pottery accumulation north of causeway widening. 6: Mud layer with hard top as floor. 7: Fill of foundation trench for wall, mainly broken brick. 8: Upper layer of fine limestone chips, crushed limestone, and mud beds. 9: Lower layer of consistency similar to 8, but separated from it by thin, hard mud floor. 10: Accumulation of large limestone blocks of irregular shape, small pieces of limestone, and some broken brick.



Pl. 80: Reconstruction of the area between the causeway and the mastaba of Imhotep during the excavation in 1914. Scale 1:300.



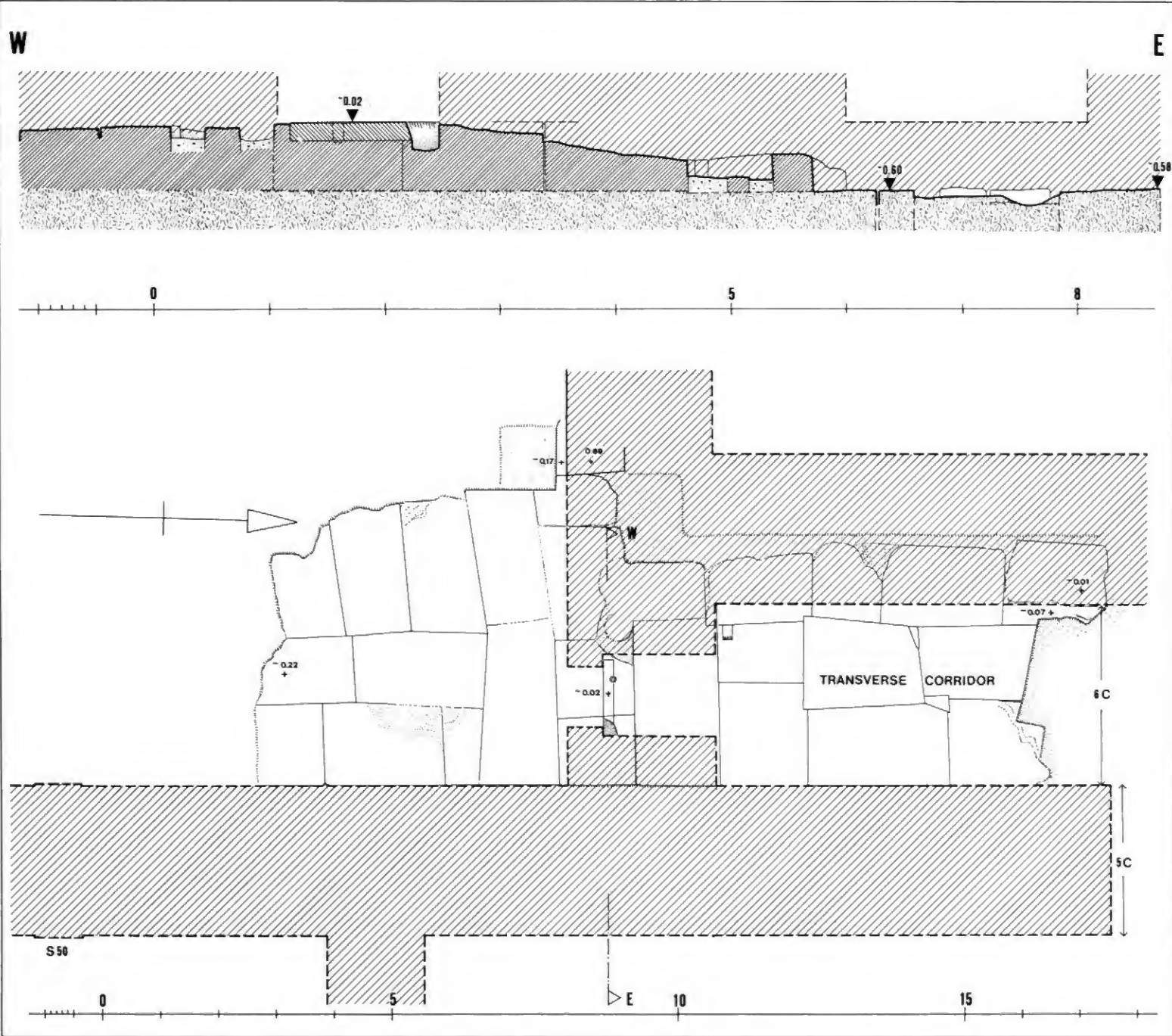
Pl. 81: Plan of the pillared court of the mortuary temple. See section on foldout IIIa. Scale 1:150.



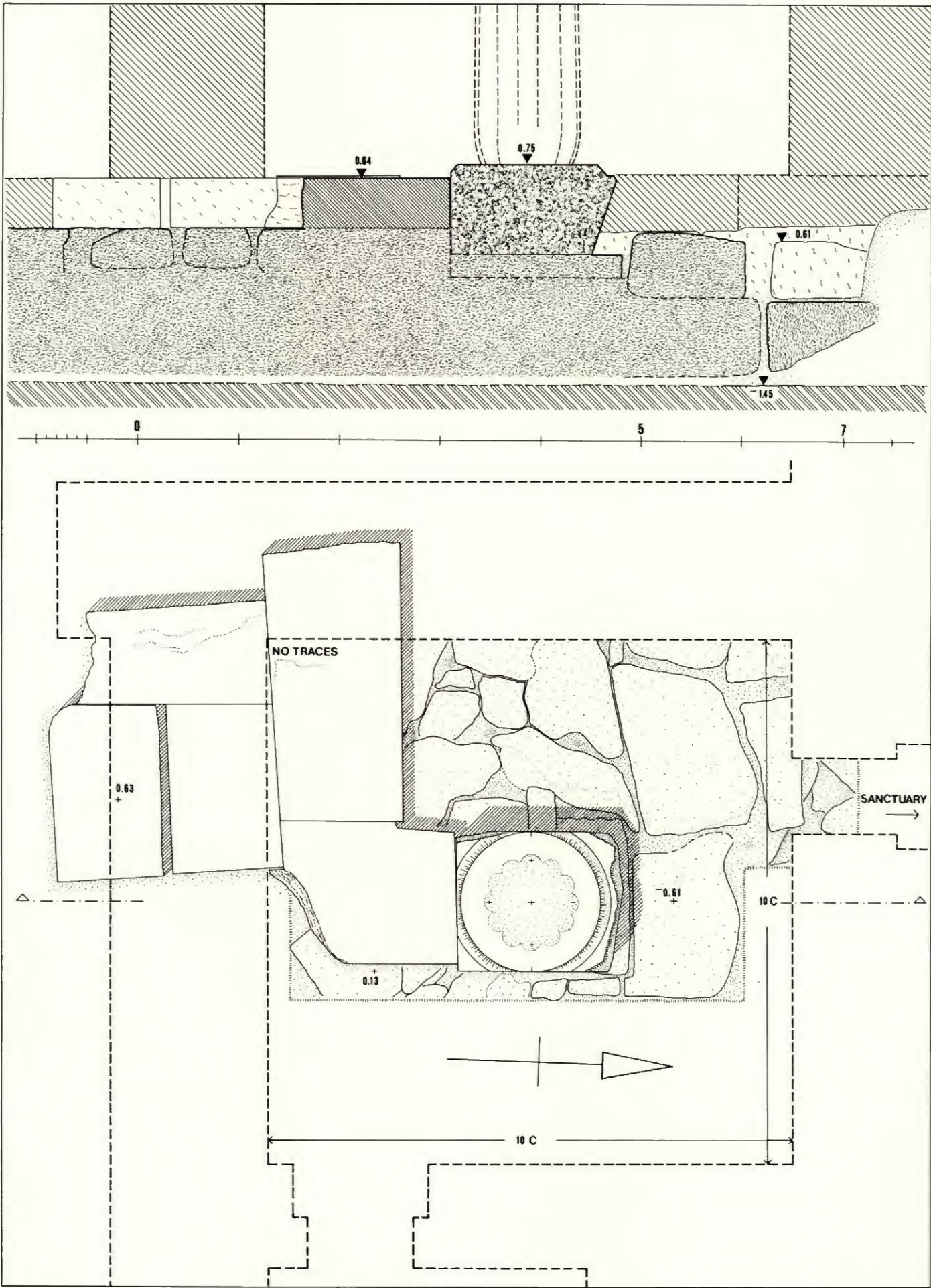


Pl. 82: Area of the north exit of the transverse corridor of the mortuary temple. Scale 1:100. See pls. 19a, 21d, 22.

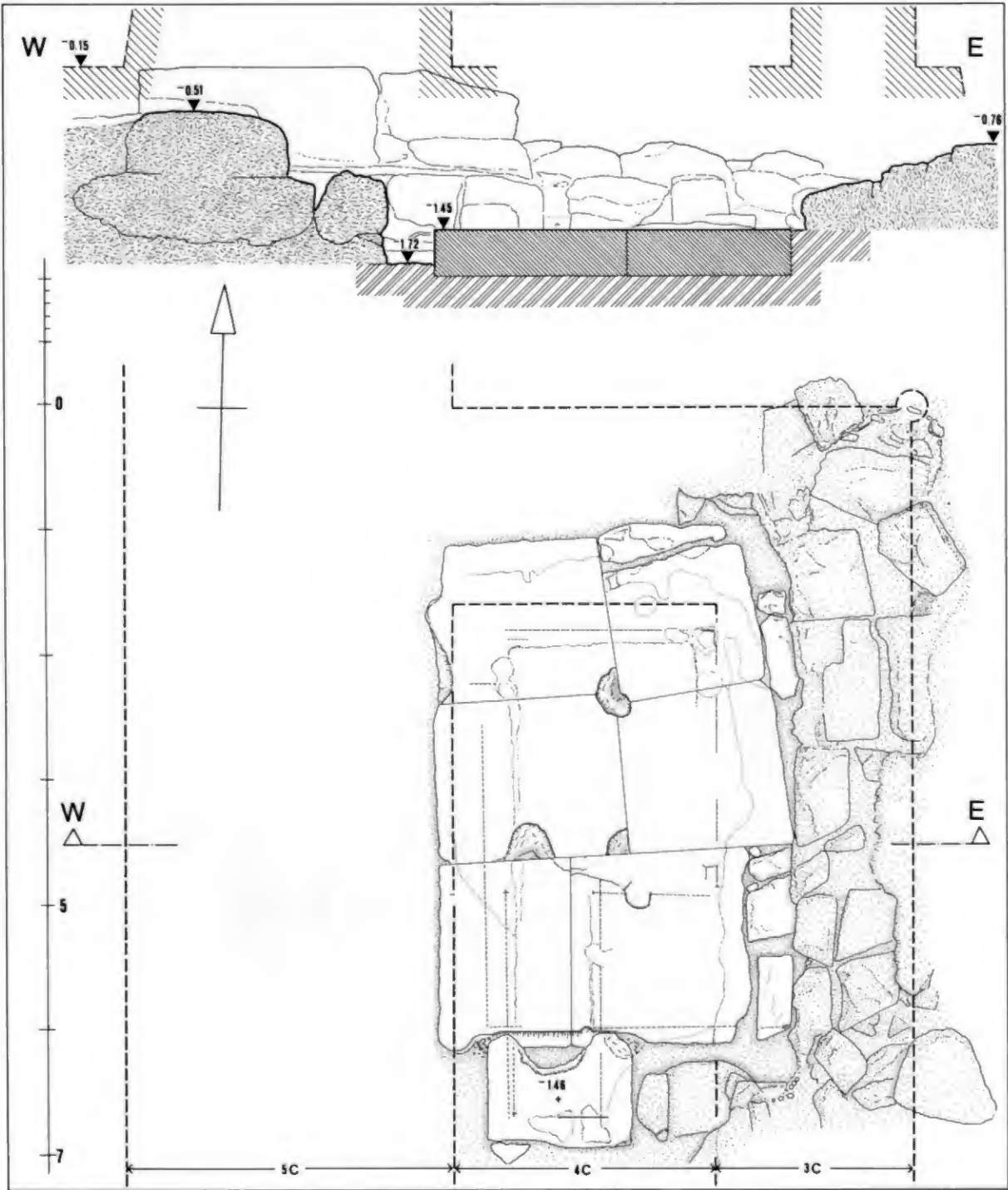




Pl. 83: Area of the south exit of the transverse corridor of the mortuary temple. Scale 1:100. See pl. 19c.

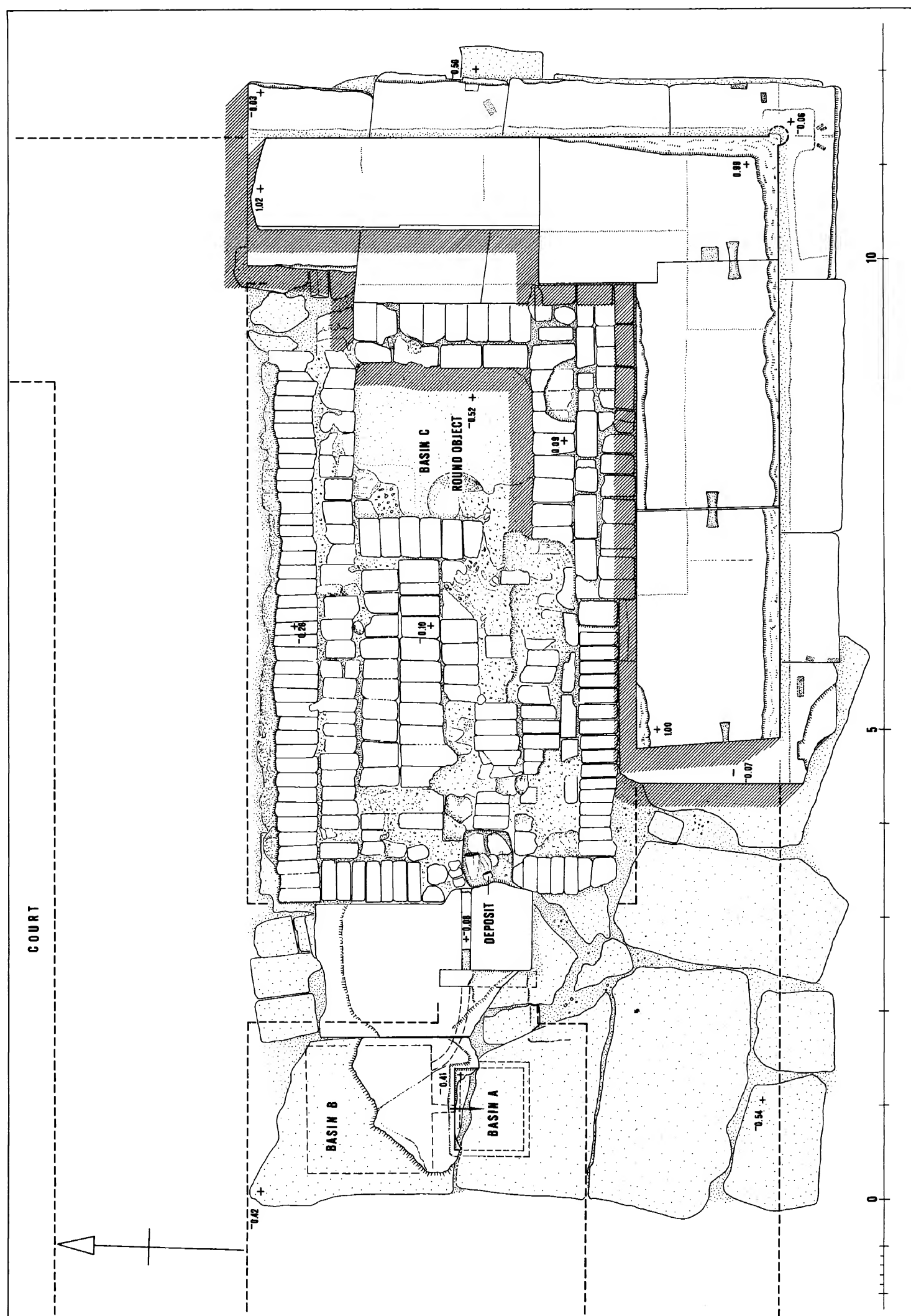


Pl. 84: Plan and section of the square antechamber. Scale 1:50. See fig. 13, pl. 17b-d.

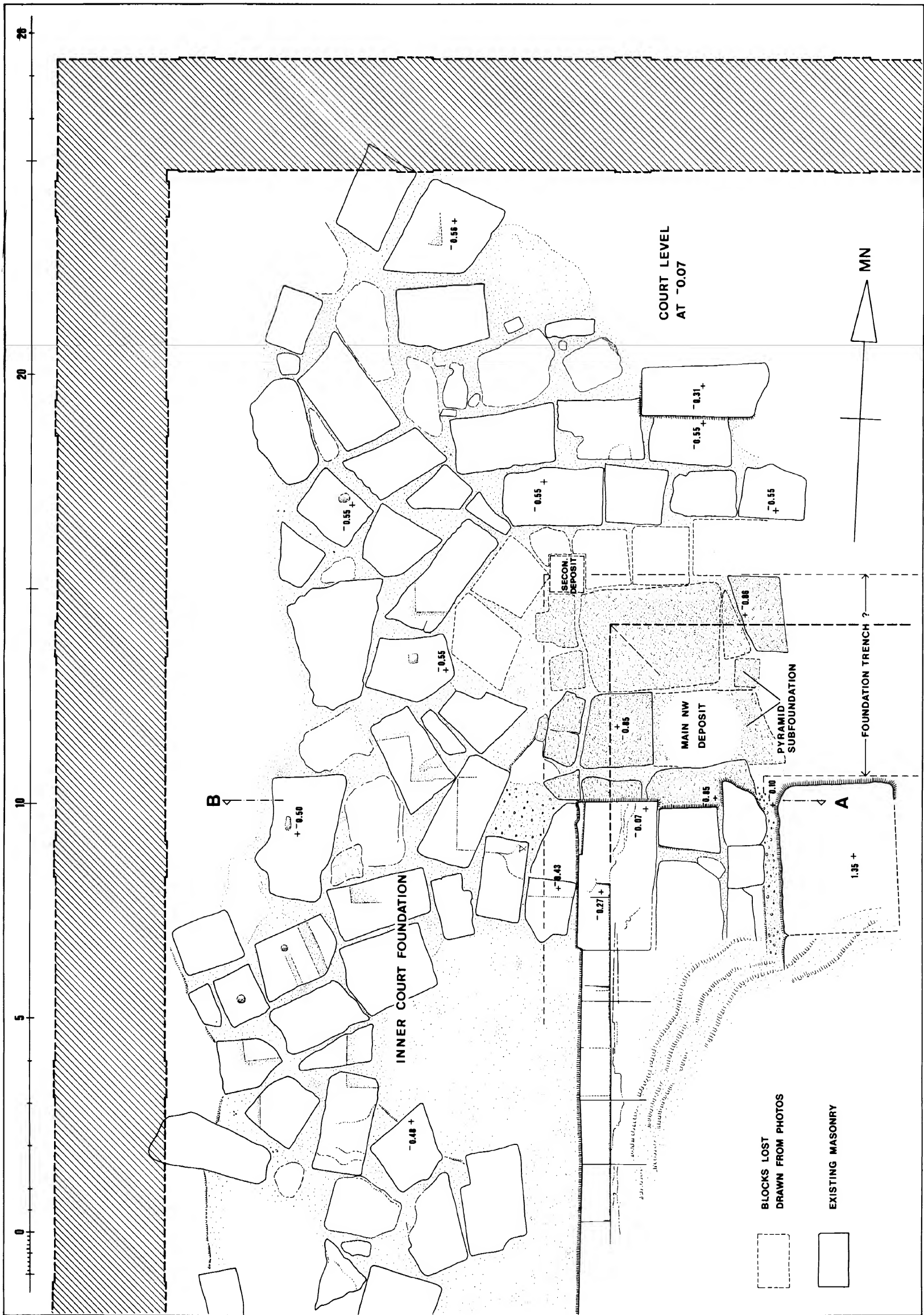


Pl. 85: Plan and section of the crypt of the mortuary temple. Scale 1:50. See pl. 22.



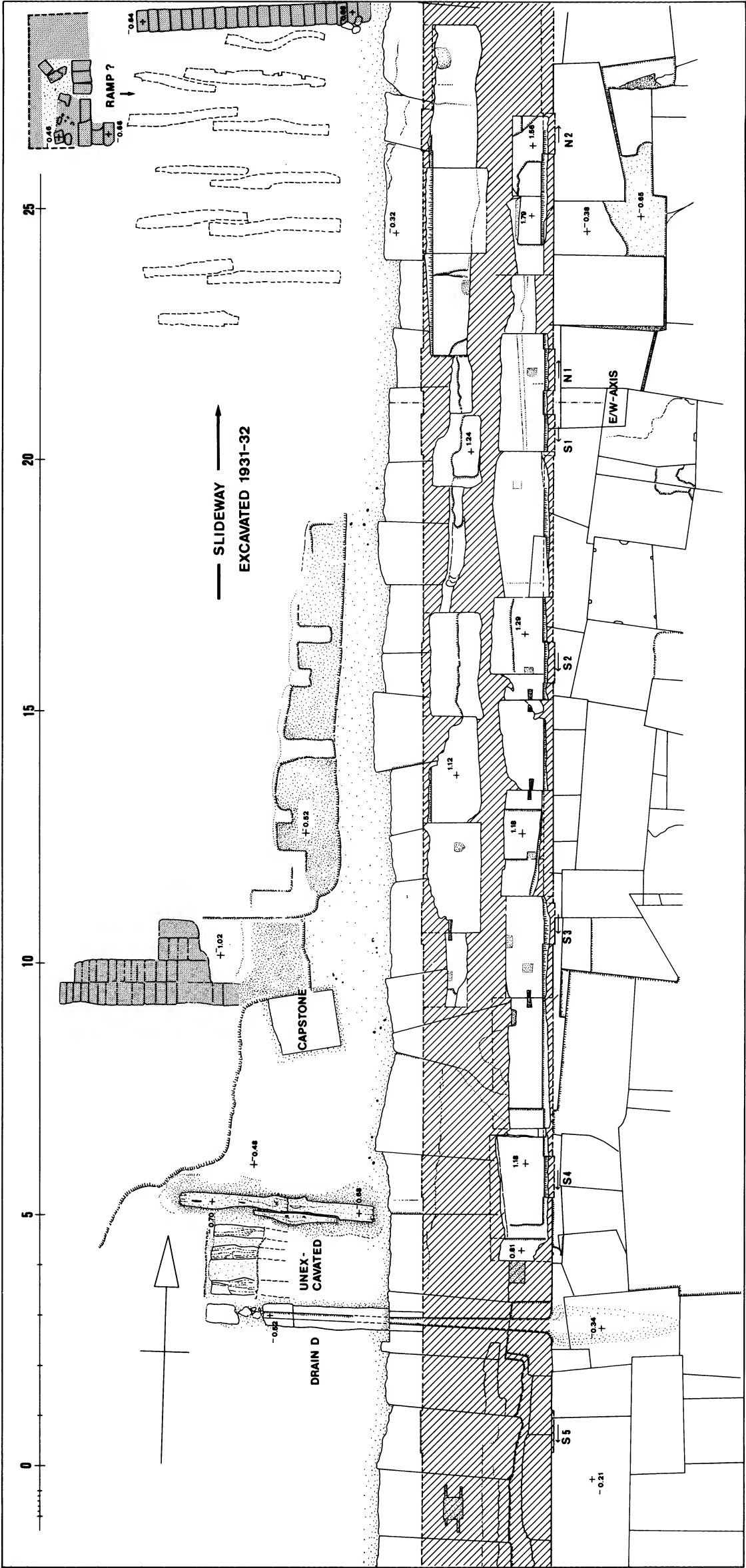


Pl. 86: Plan of the brick chamber in the southeast corner of the mortuary temple. Scale 1: 50. See figs. 16-17, pls. 23-24.

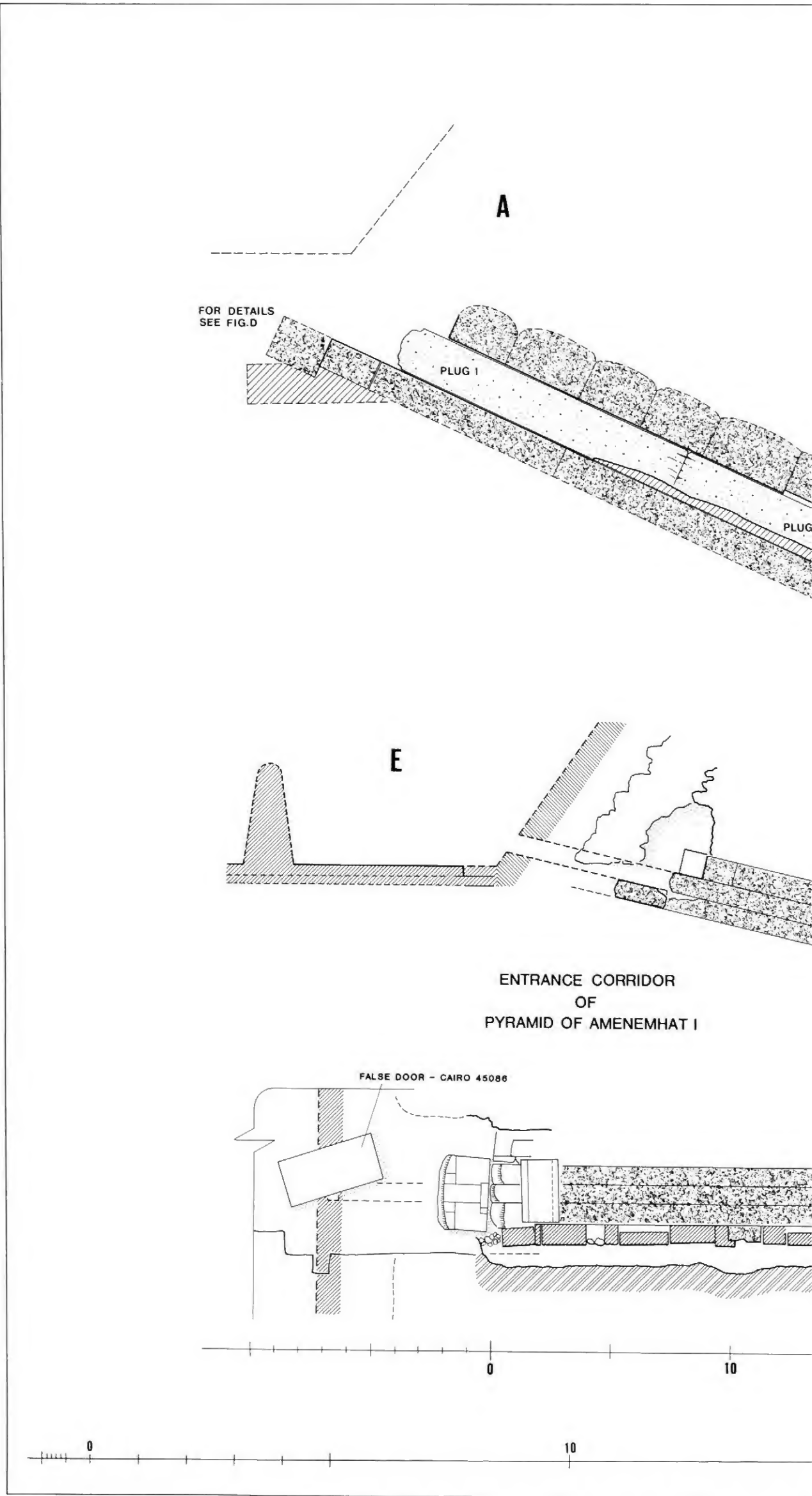


Pl. 87: Plan of the area of the northwest corner of the inner court. Scale 1:100. See section D on pl. 94; also pls. 27a, 29b, 62a-b.

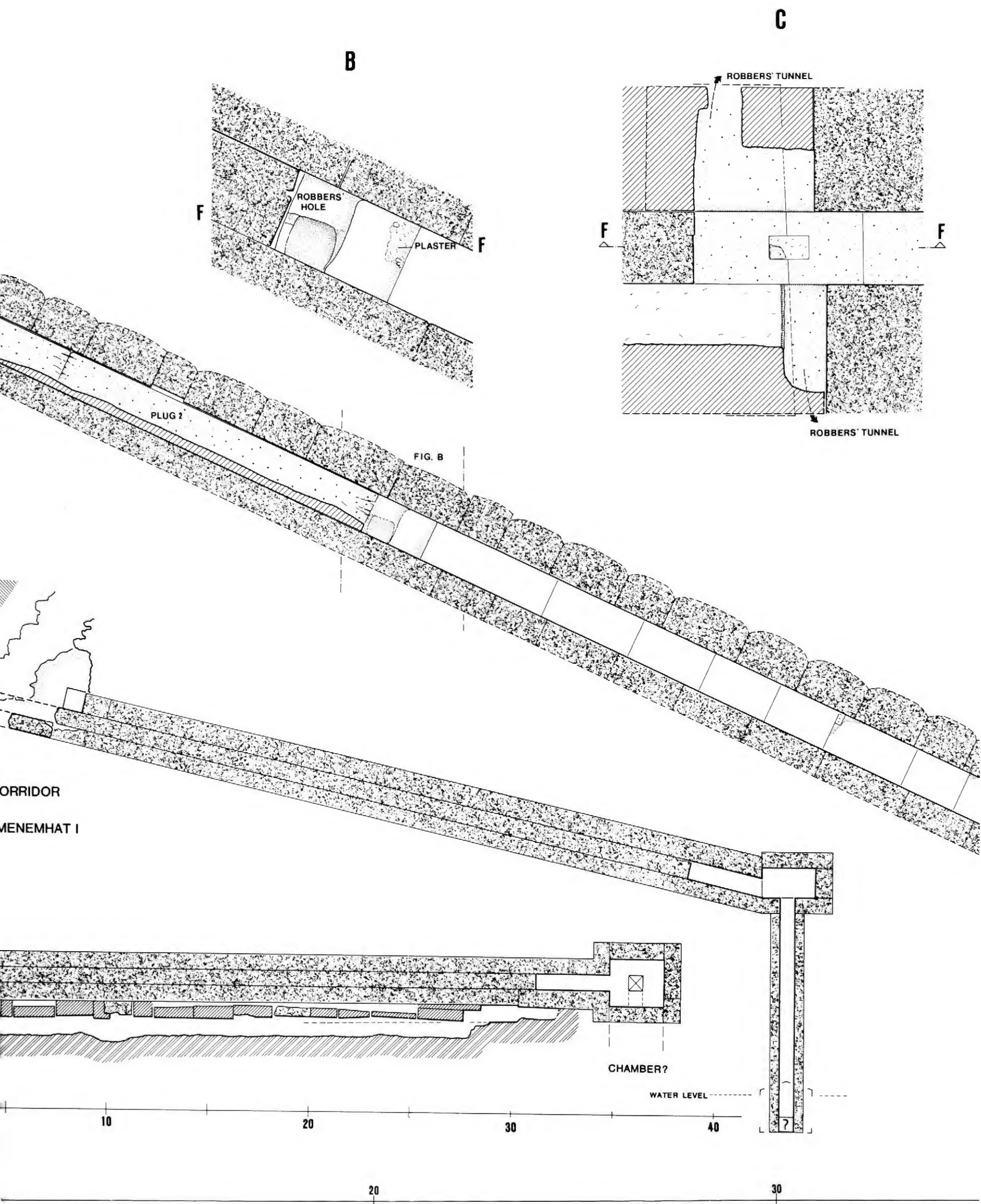




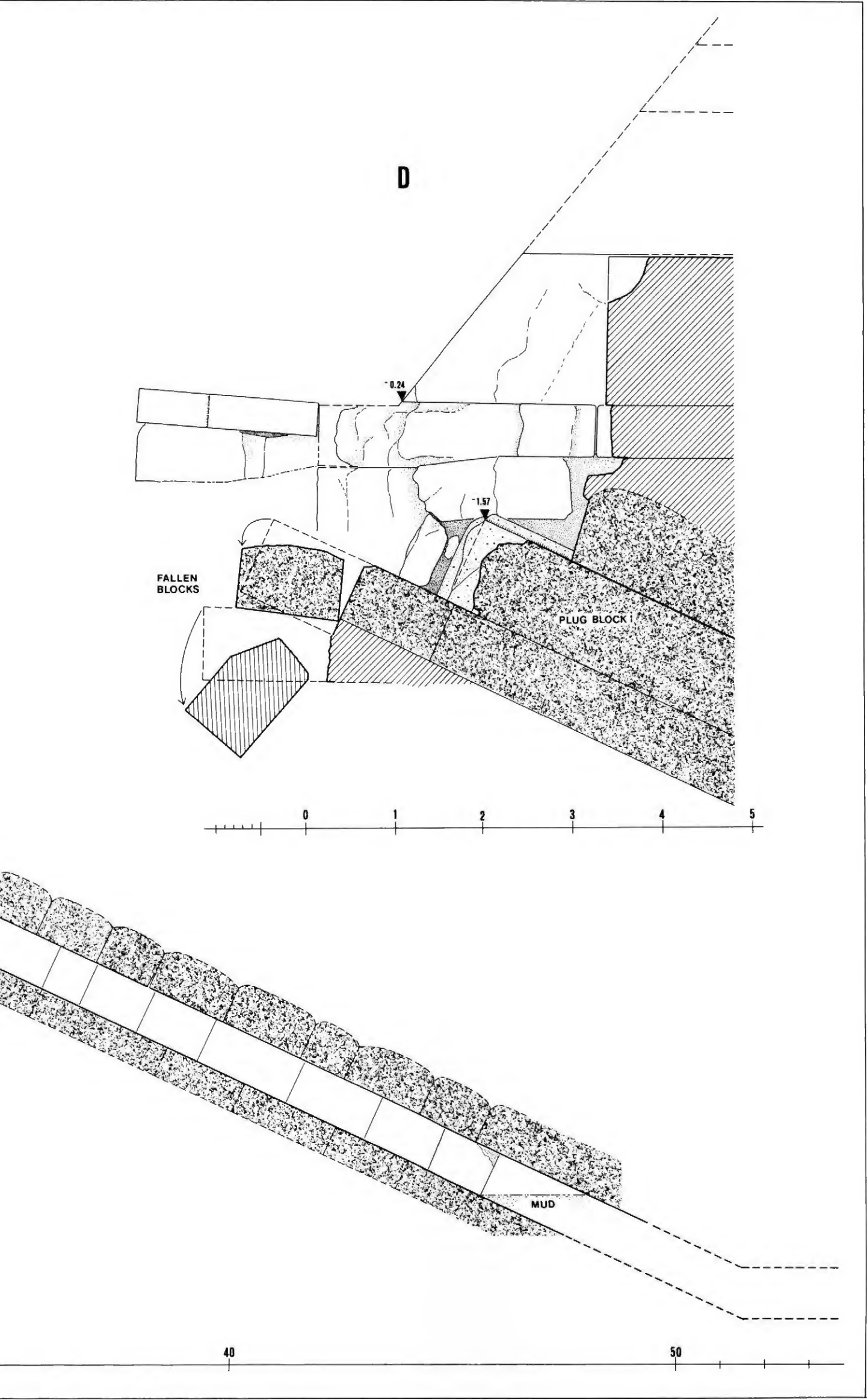
Pl. 88: Plan of the central part of the inner enclosure western wall. Scale 1:100. See pl. 27a.

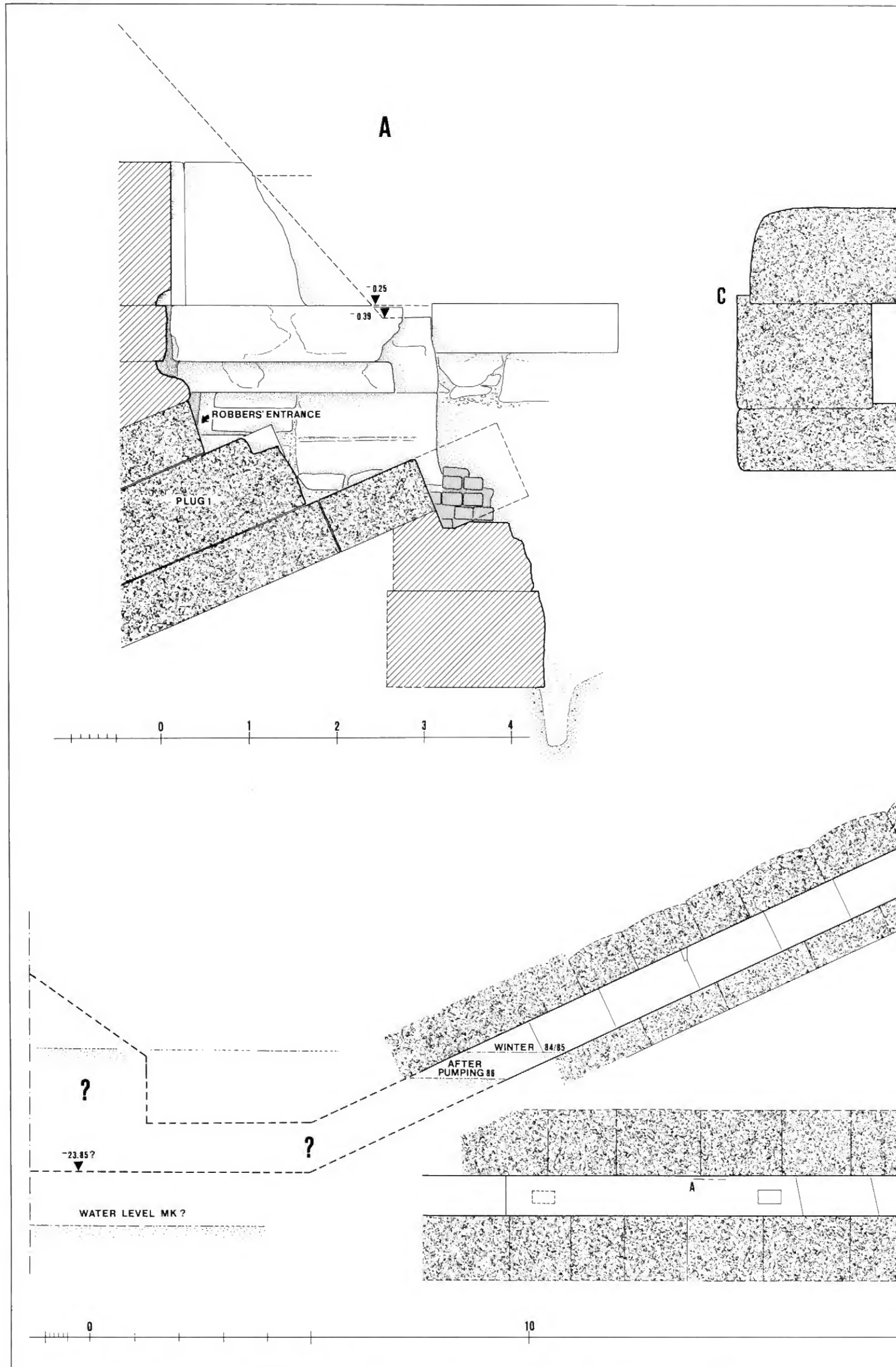


Pl. 89: Entrance corridor of the pyramid of Senwosret I. A: Section north-south, looking west to east. S of lower end of granite plug 2. Scale 1:50. C: Plan of the area of the lower end of the granite plug niches. Scale 1:50. D: North-south section through the upper end of the corridor. Scale 1:50. E and plan of underground apartments of the pyramid of Amenemhat I. Scale 1:200.



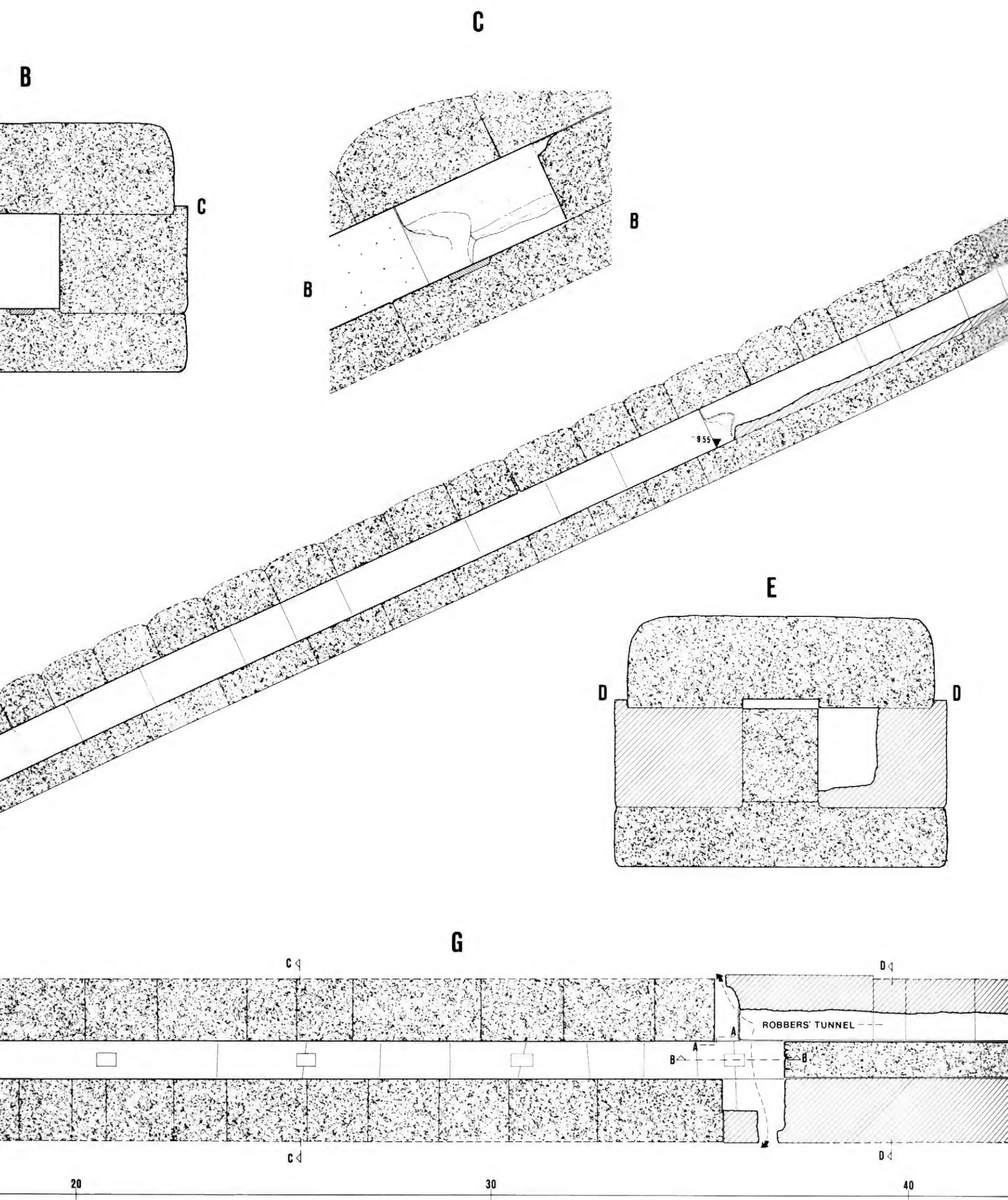
outh, looking west to east. Scale 1:100. B: Detail  
 lower end of the granite plug 2 and the two side  
 the corridor. Scale 1:50. E: North-south section  
 Scale 1:200.

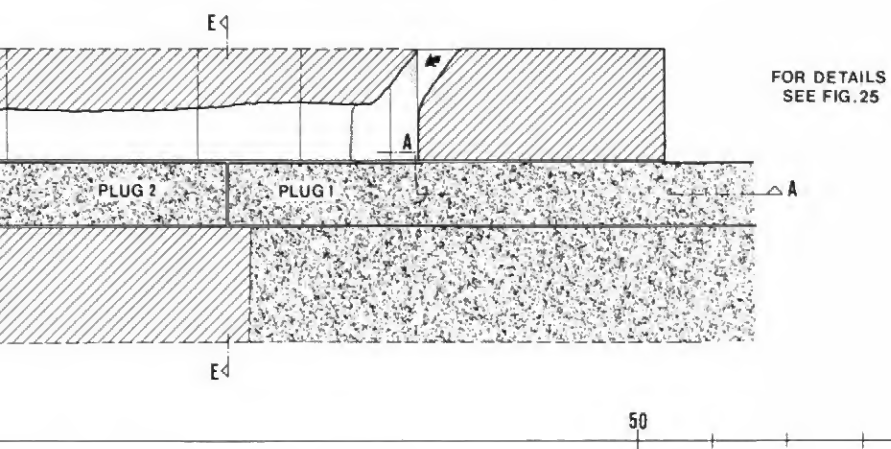
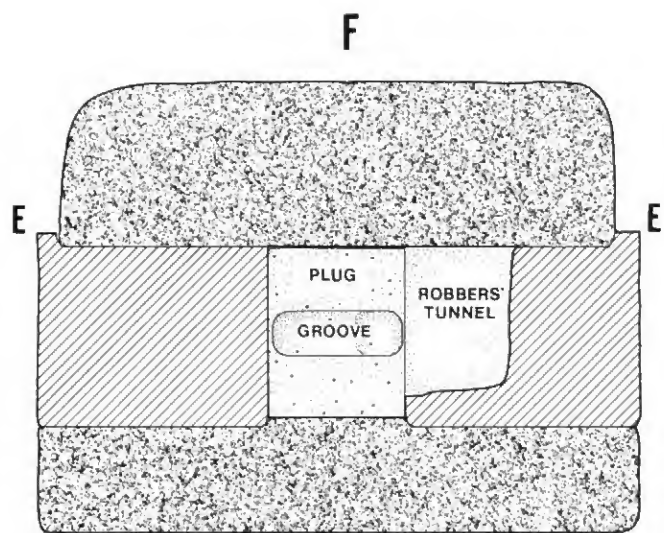
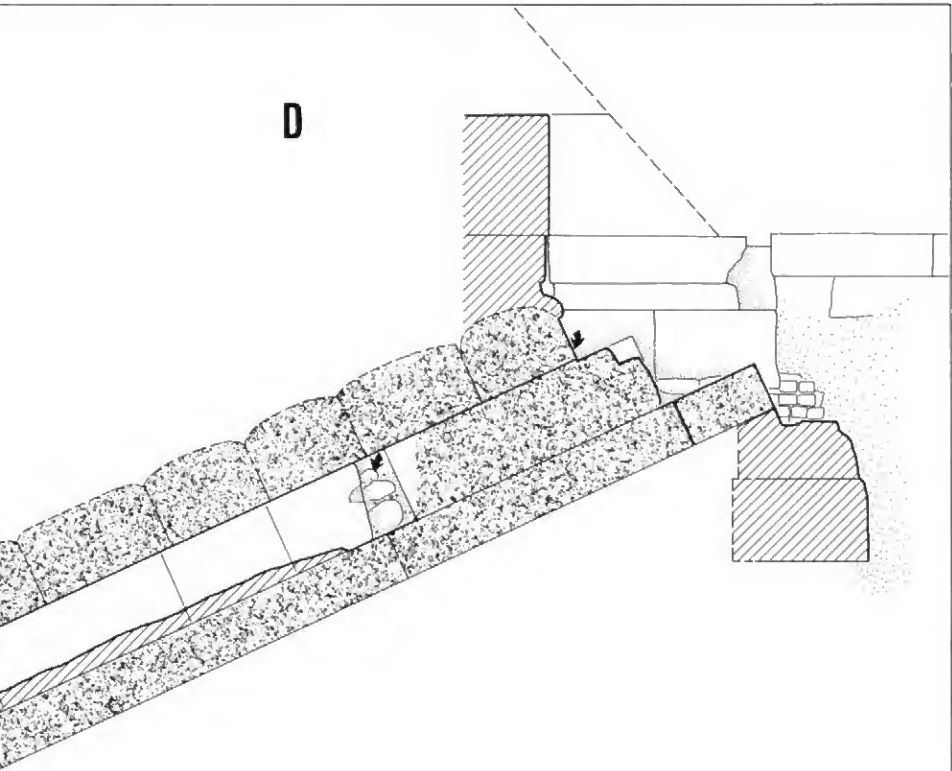




Pl. 90: Entrance corridor of the pyramid of Senwosret I. A: North-south section through upper end of corridor. Scale 1:50. B: East-west section through corridor. Scale 1:50. C: North-south section through corridor at lower end of plug 2. Scale 1:50. D: Section north-south looking east to west. Scale 1:100. E: East-west section through plug 2, and robbers' tunnel. Scale 1:50. F: East-west section through plug 2 at joint between plugs 1 and 2. Scale 1:50.

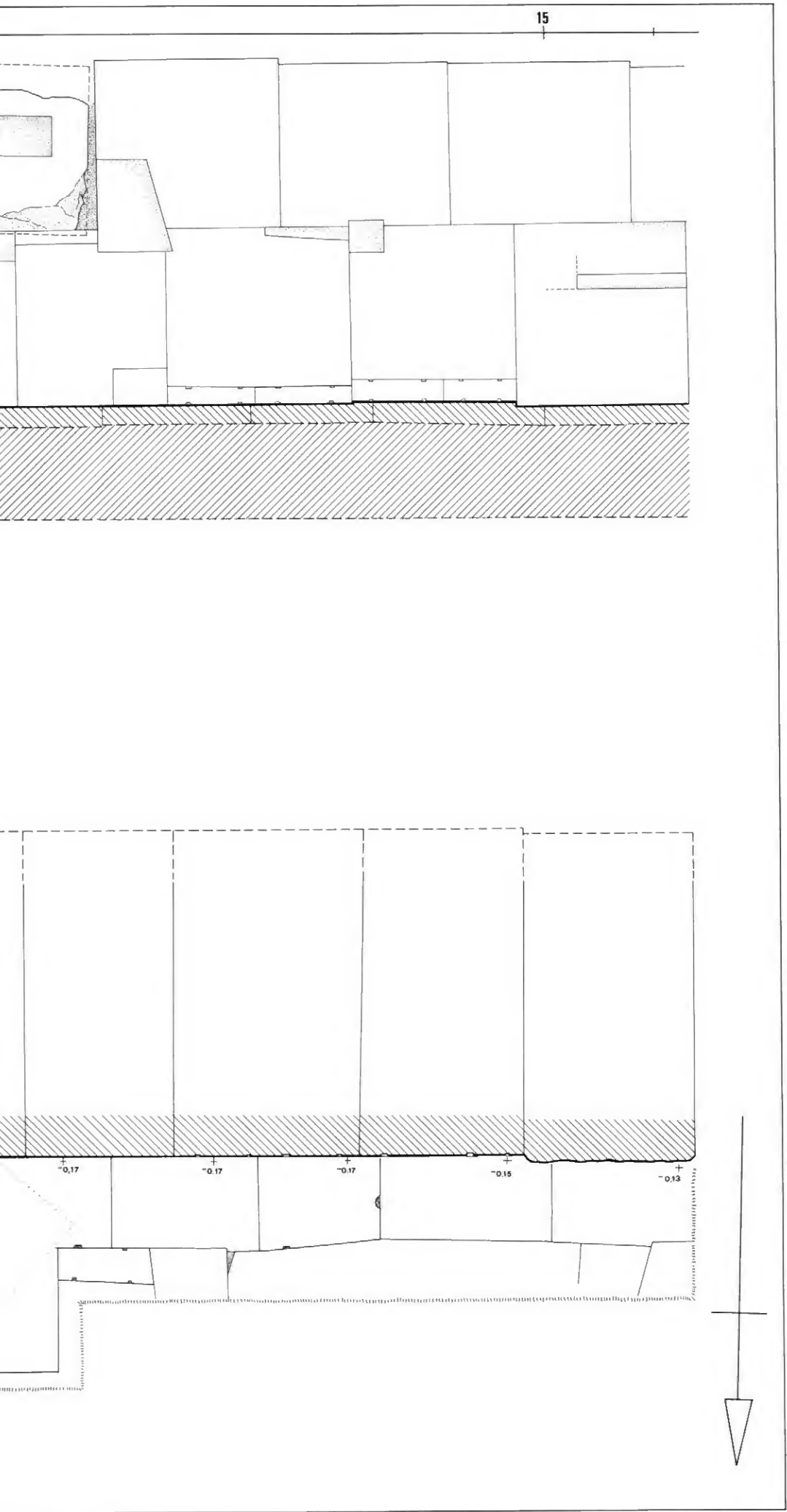


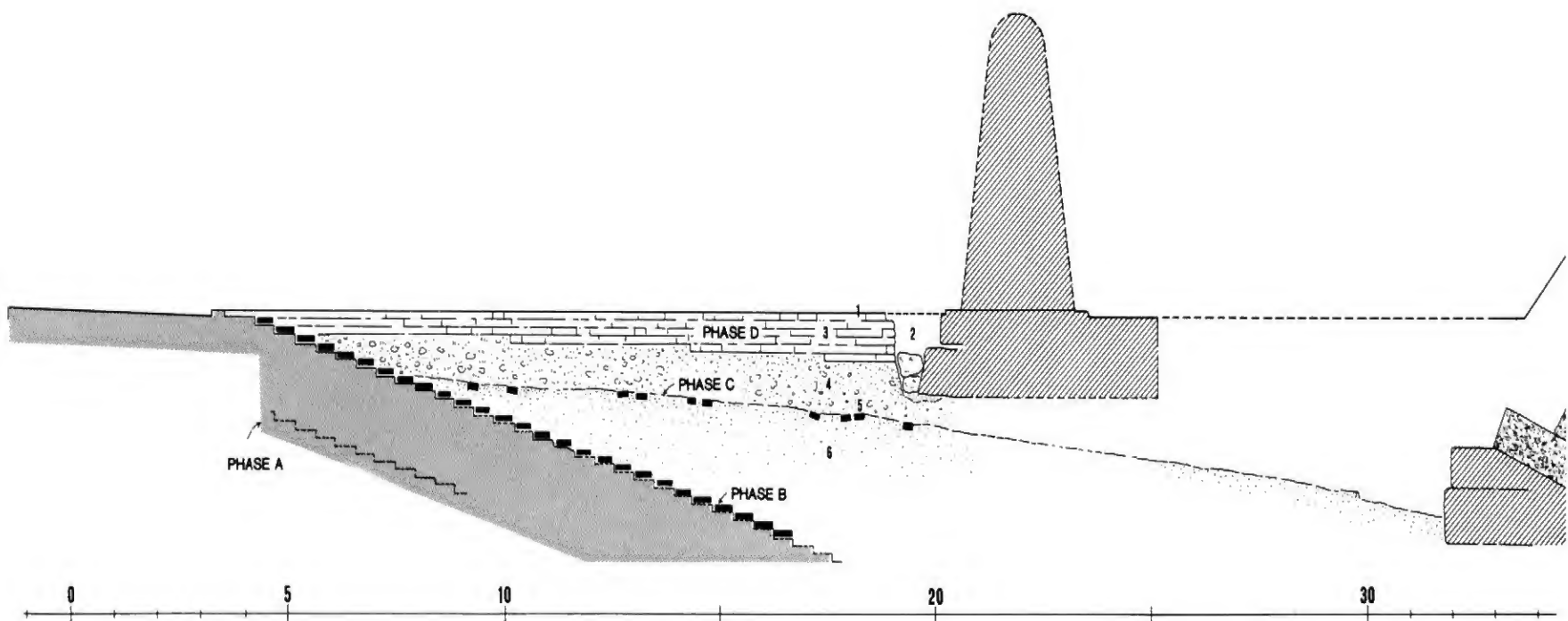




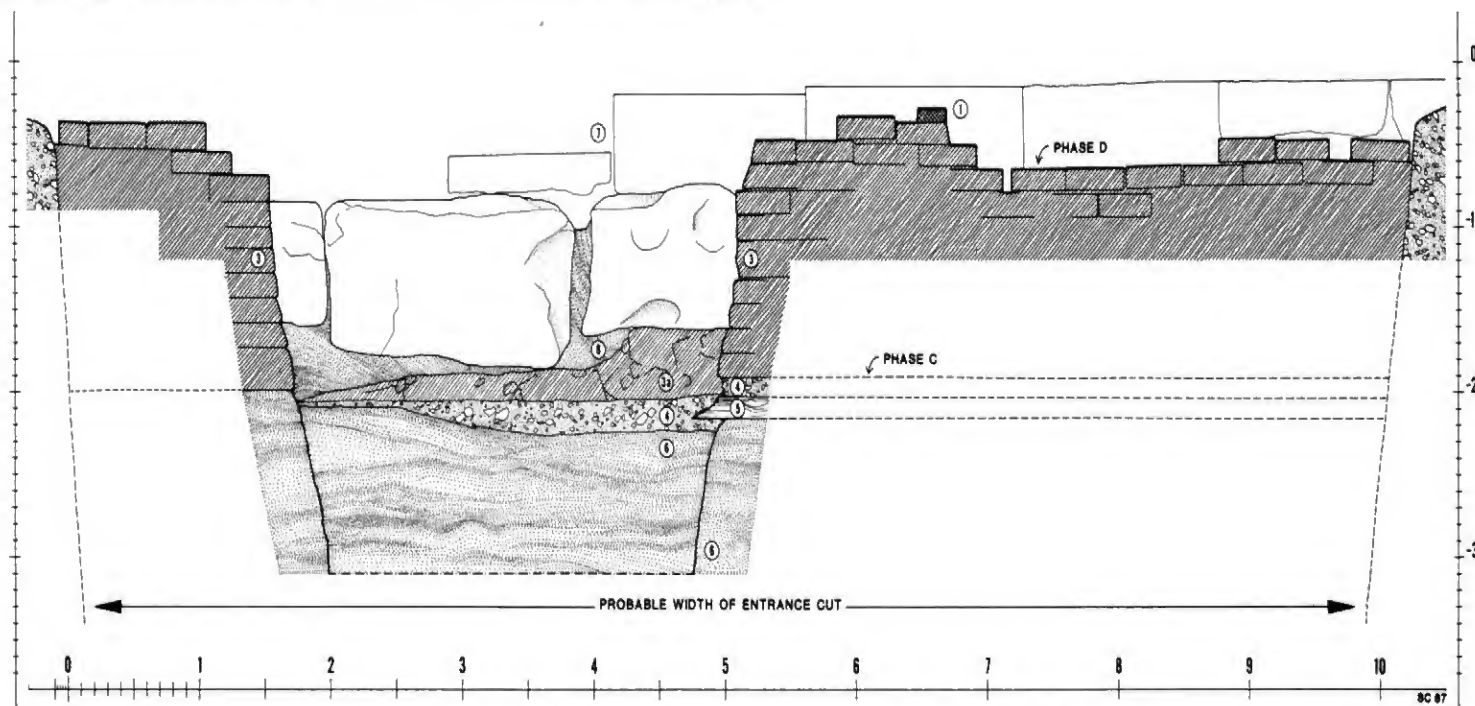


Pl. 91: Plan and section of the area of the pyramid entrance. East-west elevation, seen from north to south. Scale 1:50. See pls. 27b, 44a-b.

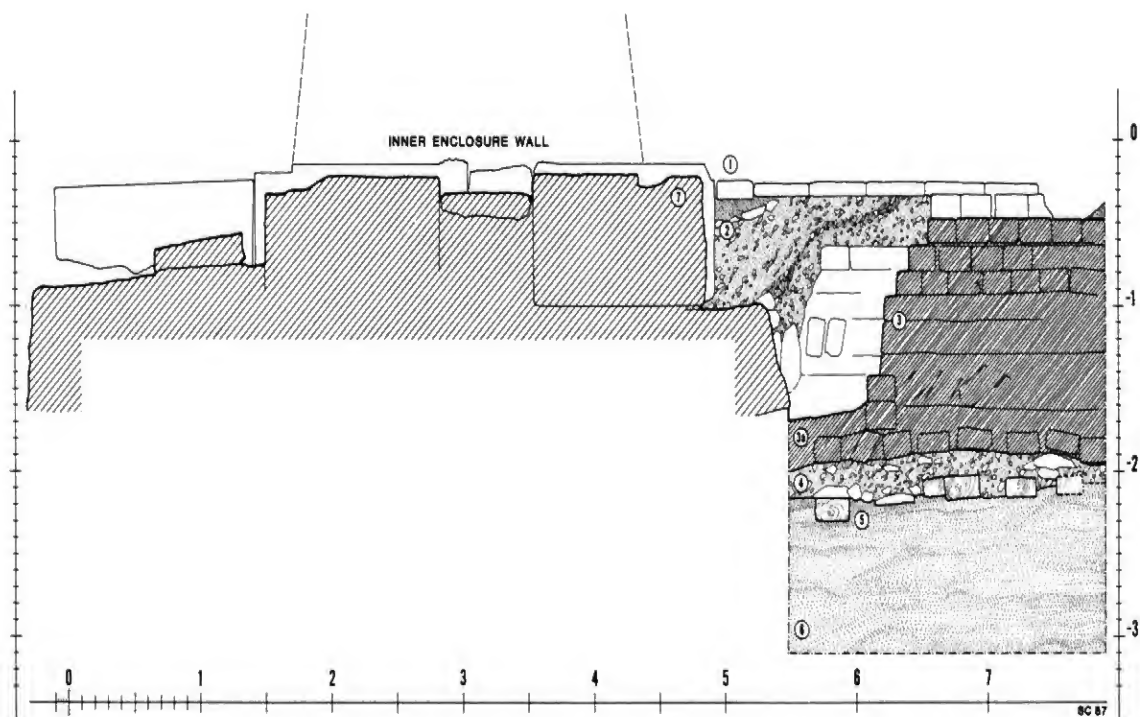




Pl. 92a: North-south section through the entrance cut, seen from west to east. Scale 1:150. See pl. 43.

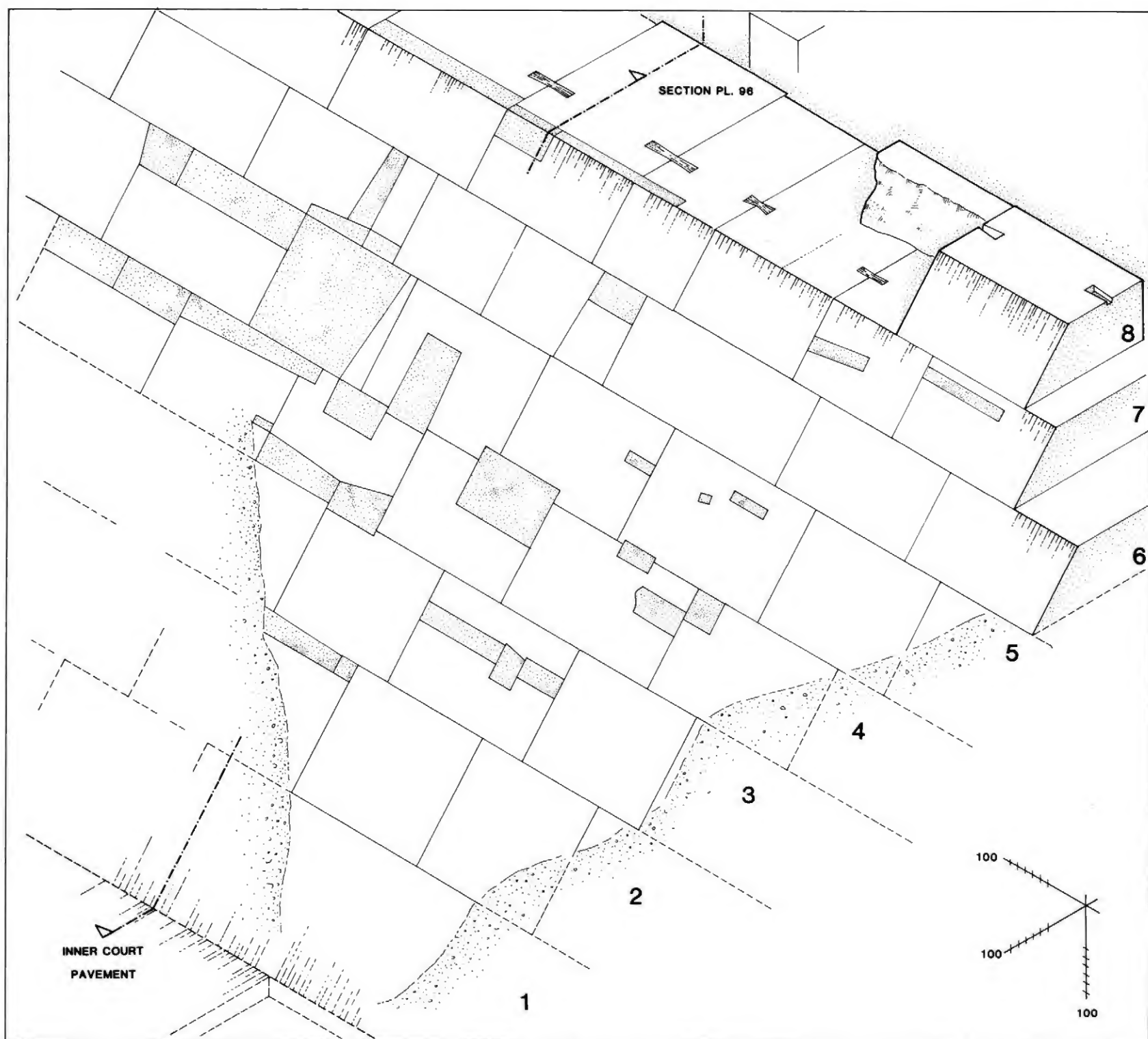


Pl. 92b: East-west section through entrance cut, seen from north to south after excavation in 1987. Scale 1:50. See pls. 42c-43d.

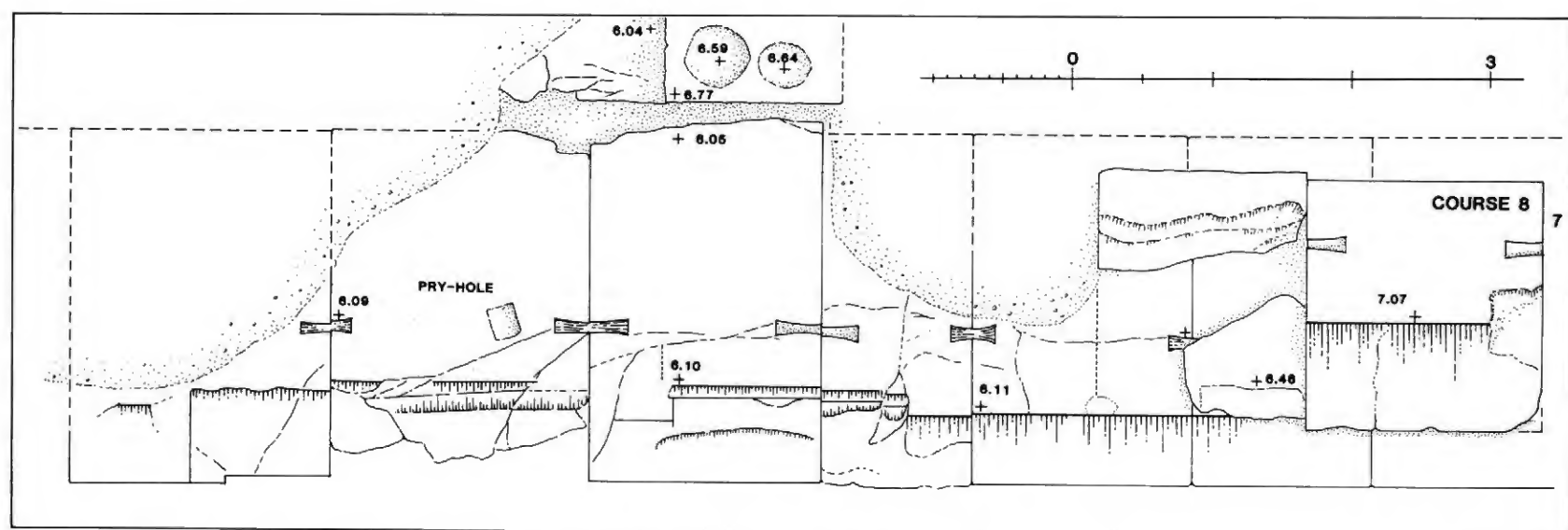


Pl. 92c: North-south section through entrance cut seen from east to west after excavation in 1987. Scale 1:50. See pls. 42c-43d.  
1: Leveling wall. 2: Foundation trench of enclosure wall filled with builders' debris. 3: Brick and mud (3a) of final closing of entrance cut (phase D). 4: Mortar and limestone chips surface of ramp phase C. 5: Boat-timber covering ramp phase C. 6: Sand fill above ramp phase B. 7: Foundation blocks of enclosure wall. 8: Foundation sand.

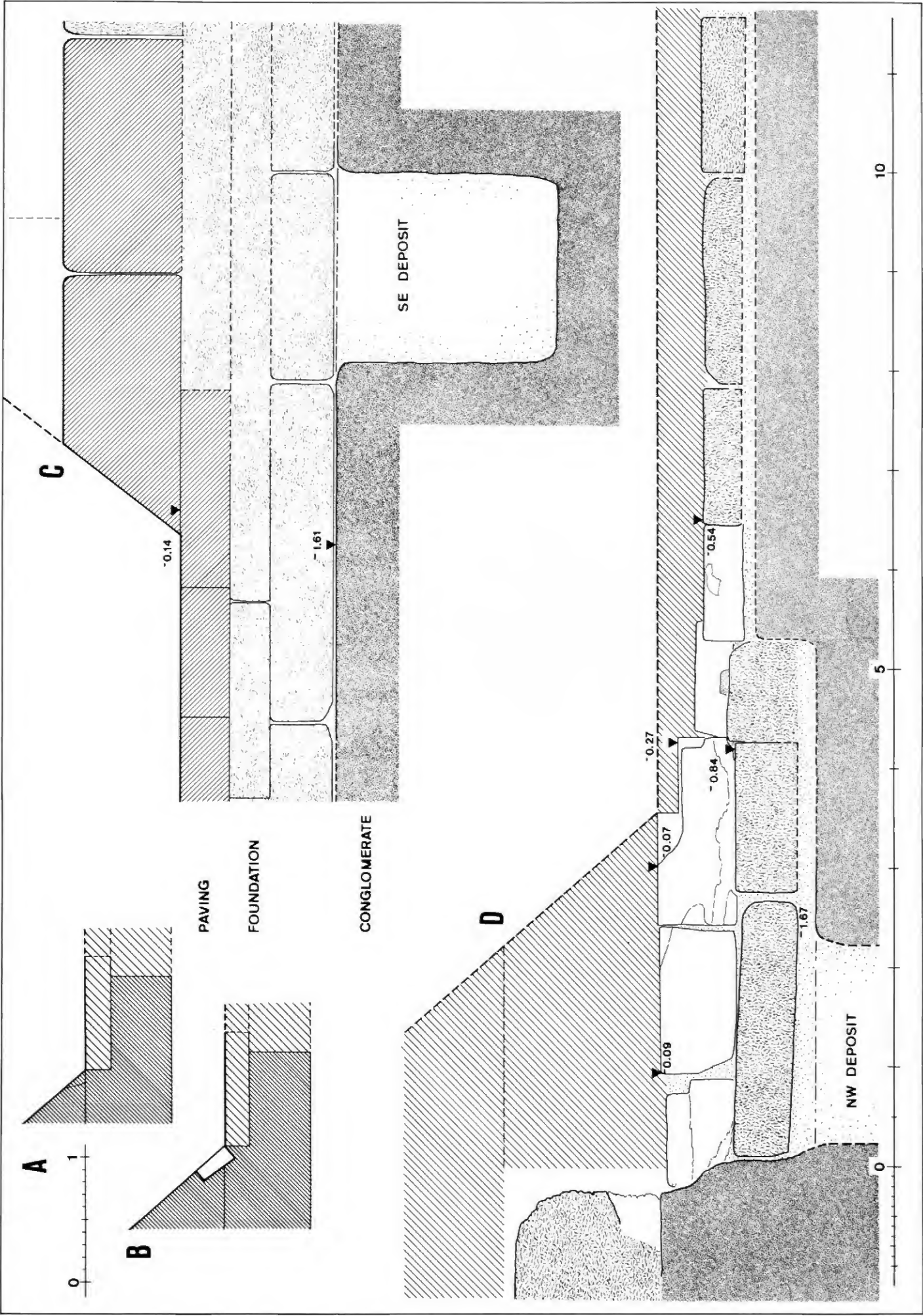




Pl. 93a: Isometric representation of the central part of the preserved pyramid casing at the west side of the pyramid, with indication of the repairs. Scale 1:75. See pls. 27a, 40, 41d.

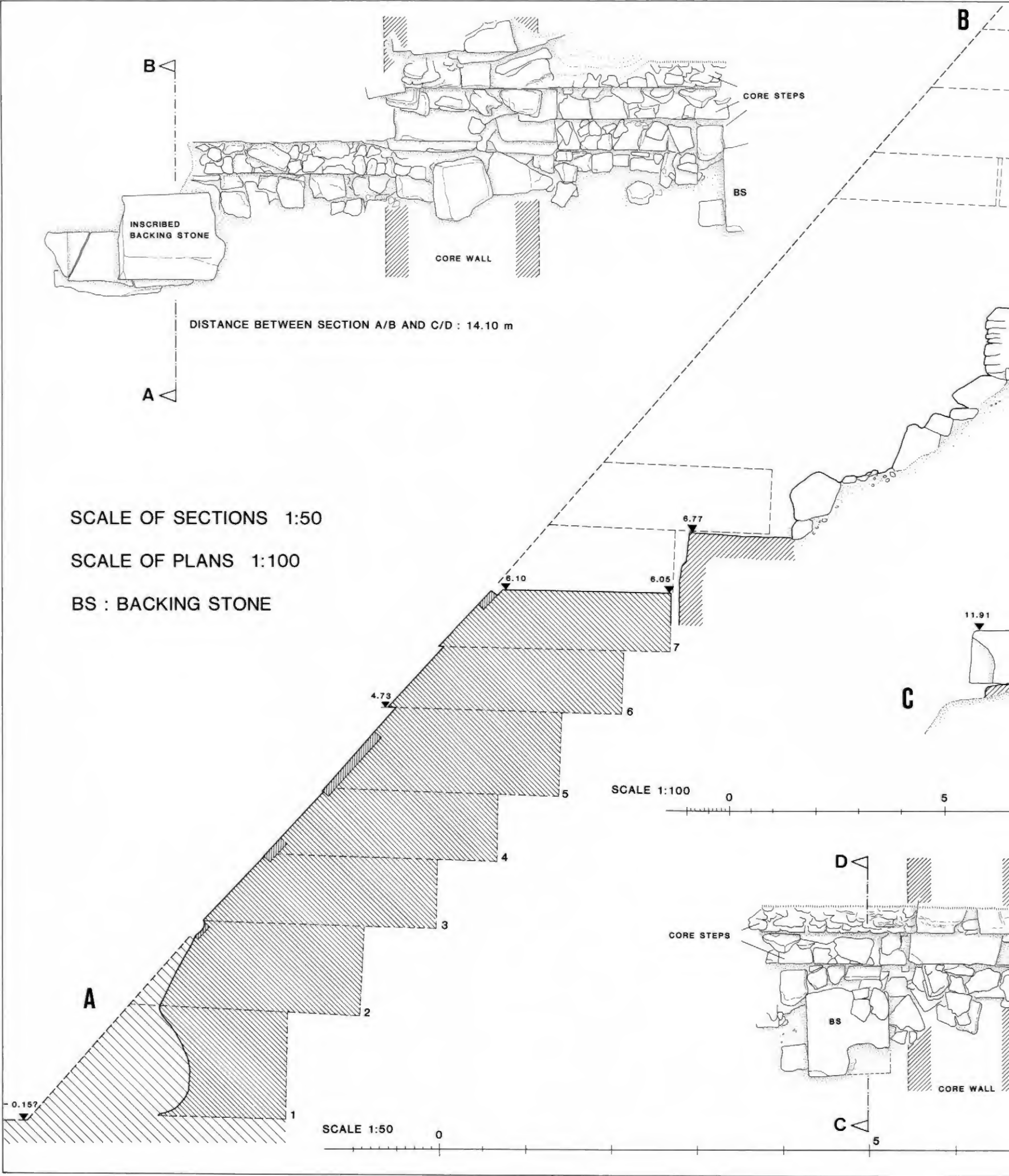


Pl. 93b: Top view of courses 7 and 8 of casing at west side of the pyramid. Scale 1:50.

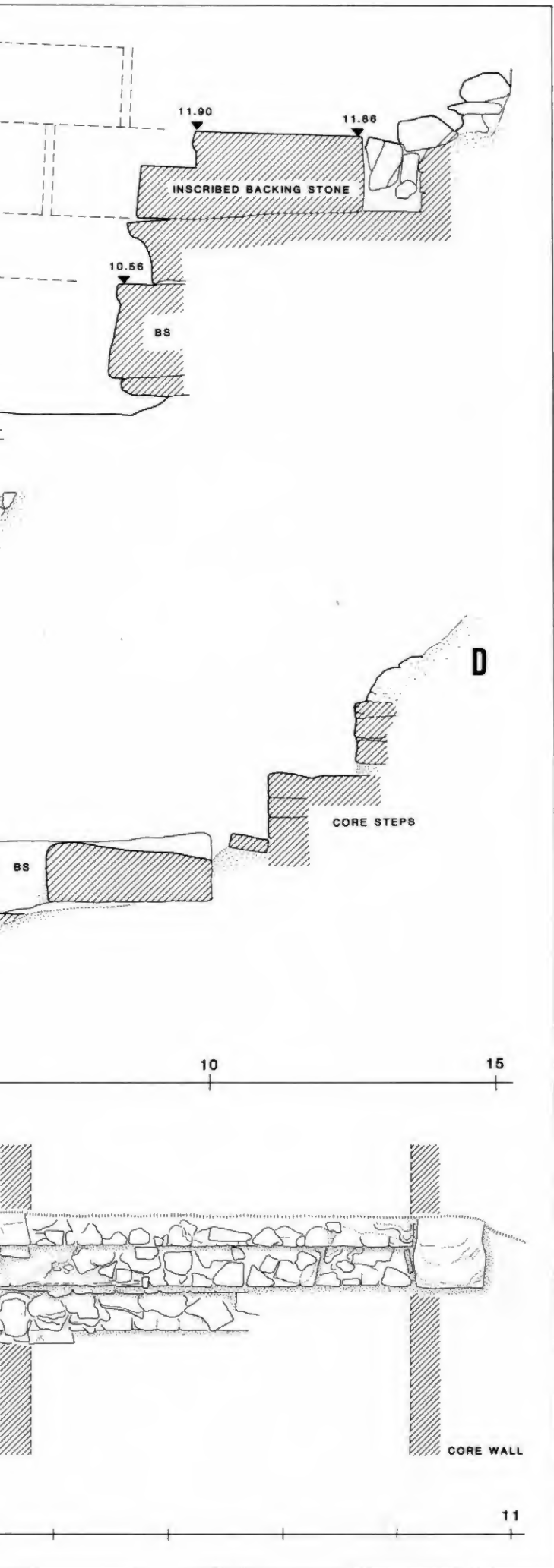


Pl. 94: Sections through the pyramid foundations at the foot of the pyramid. A: Broken lower edge of casing block (near north end of west side). Scale 1:40. B: Same, after repair. Scale 1:40. C: East-west section of southeast corner, seen from north to south. Scale 1:50. D: East-west section of northwest corner, seen from north to south. Scale 1:50.

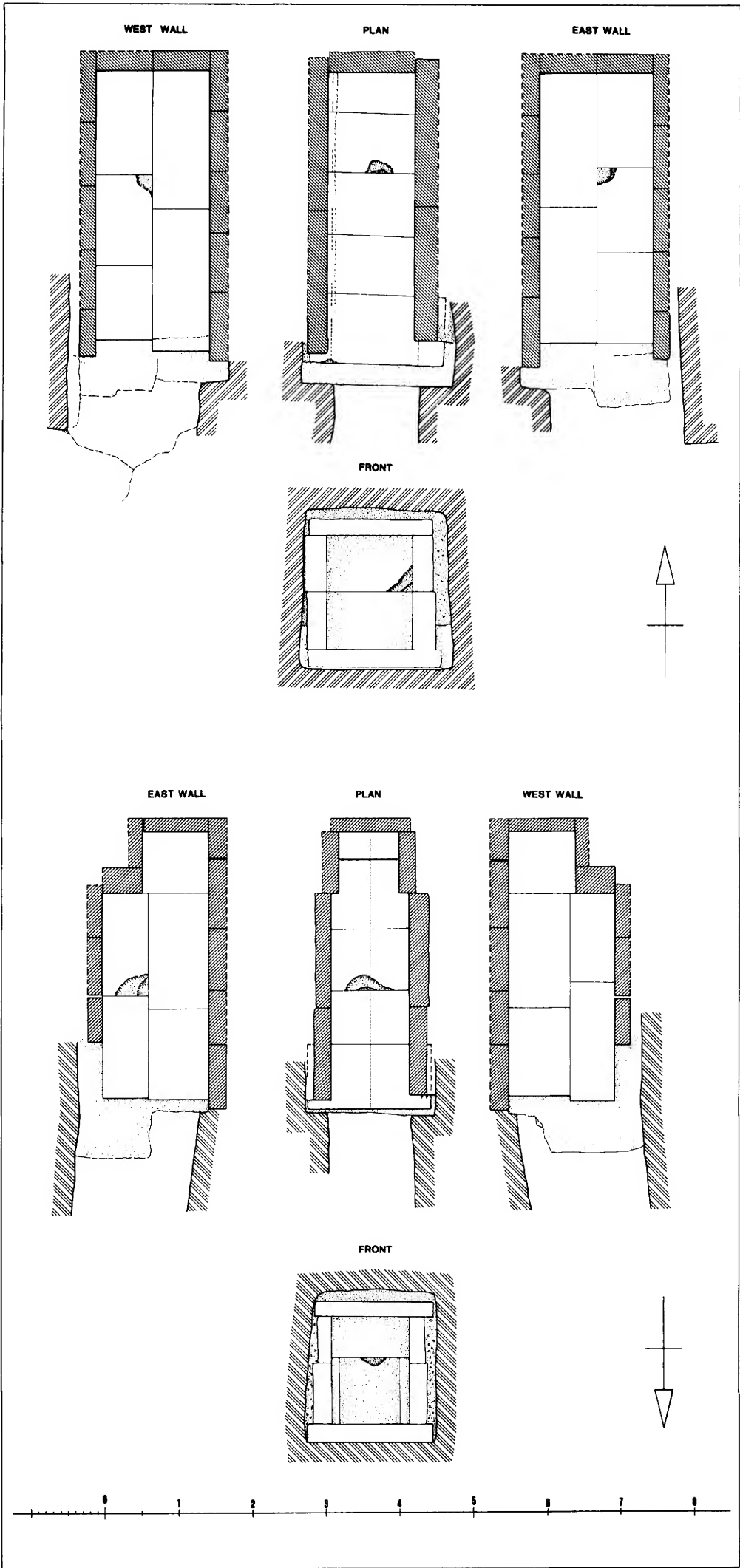




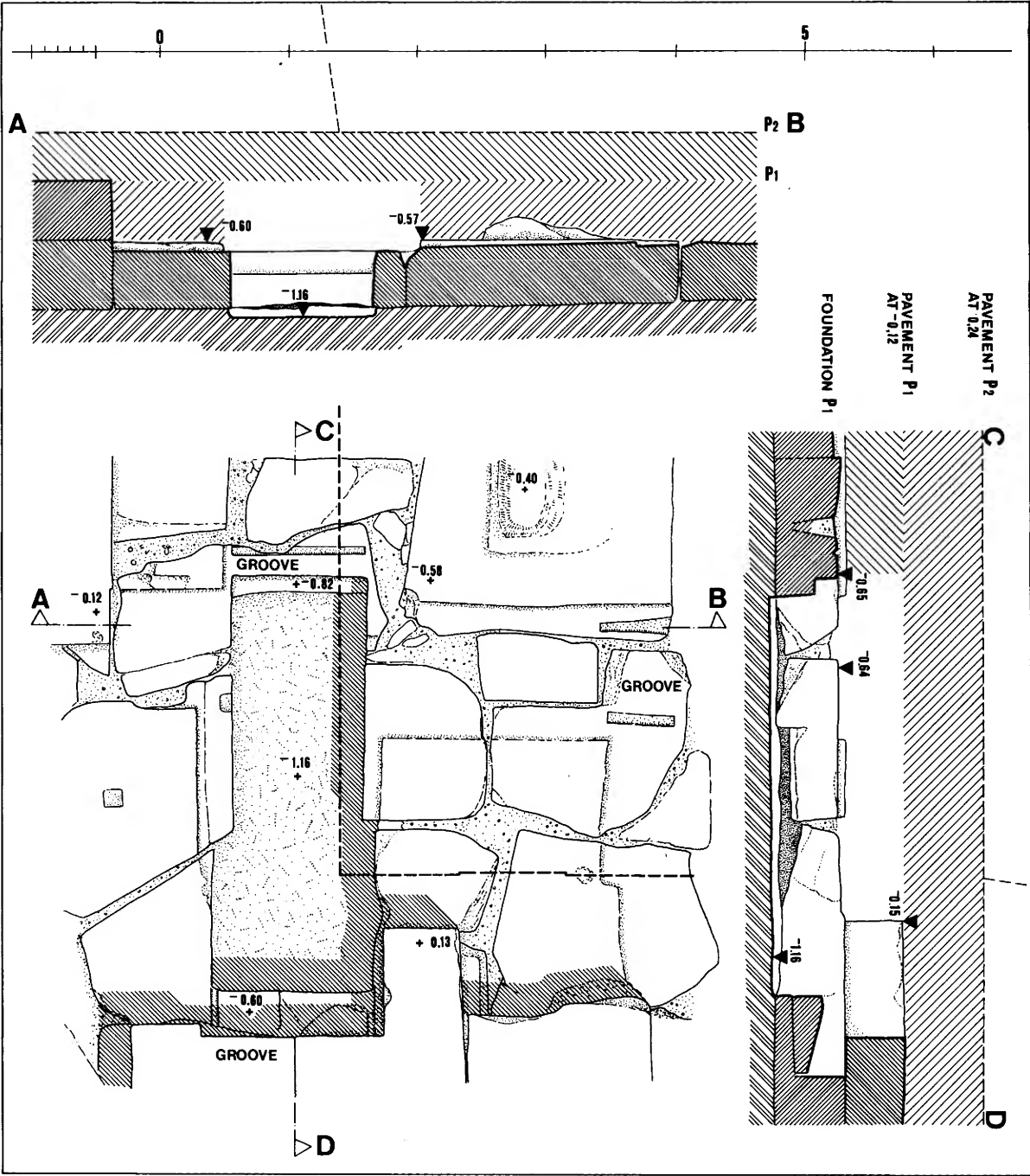
Pl. 96: West-east sections through pyramid masonry at west side of pyramid. Scale 1:50.



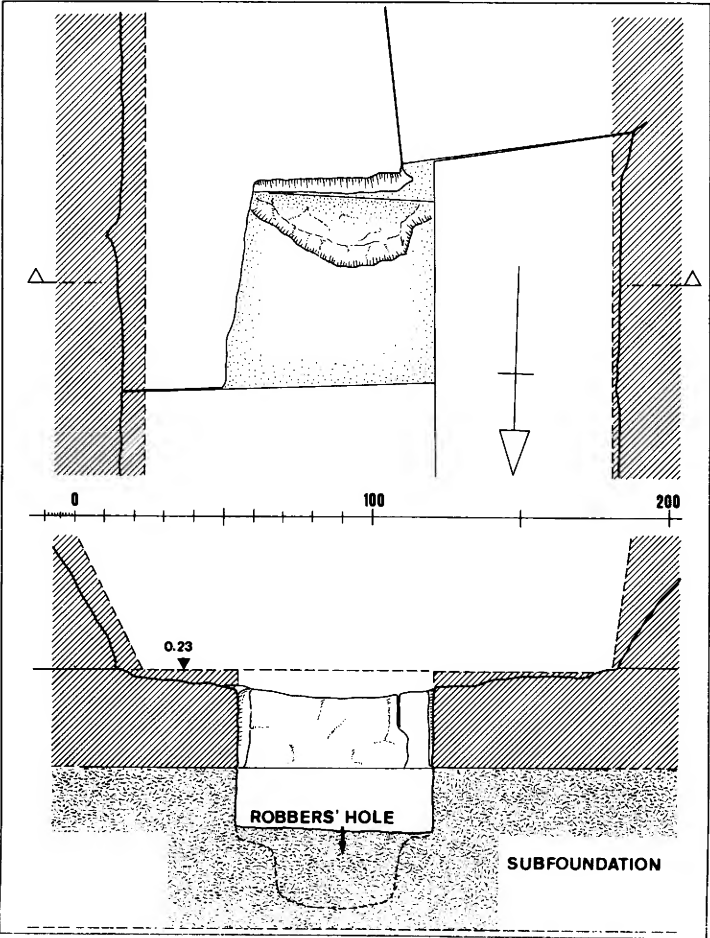




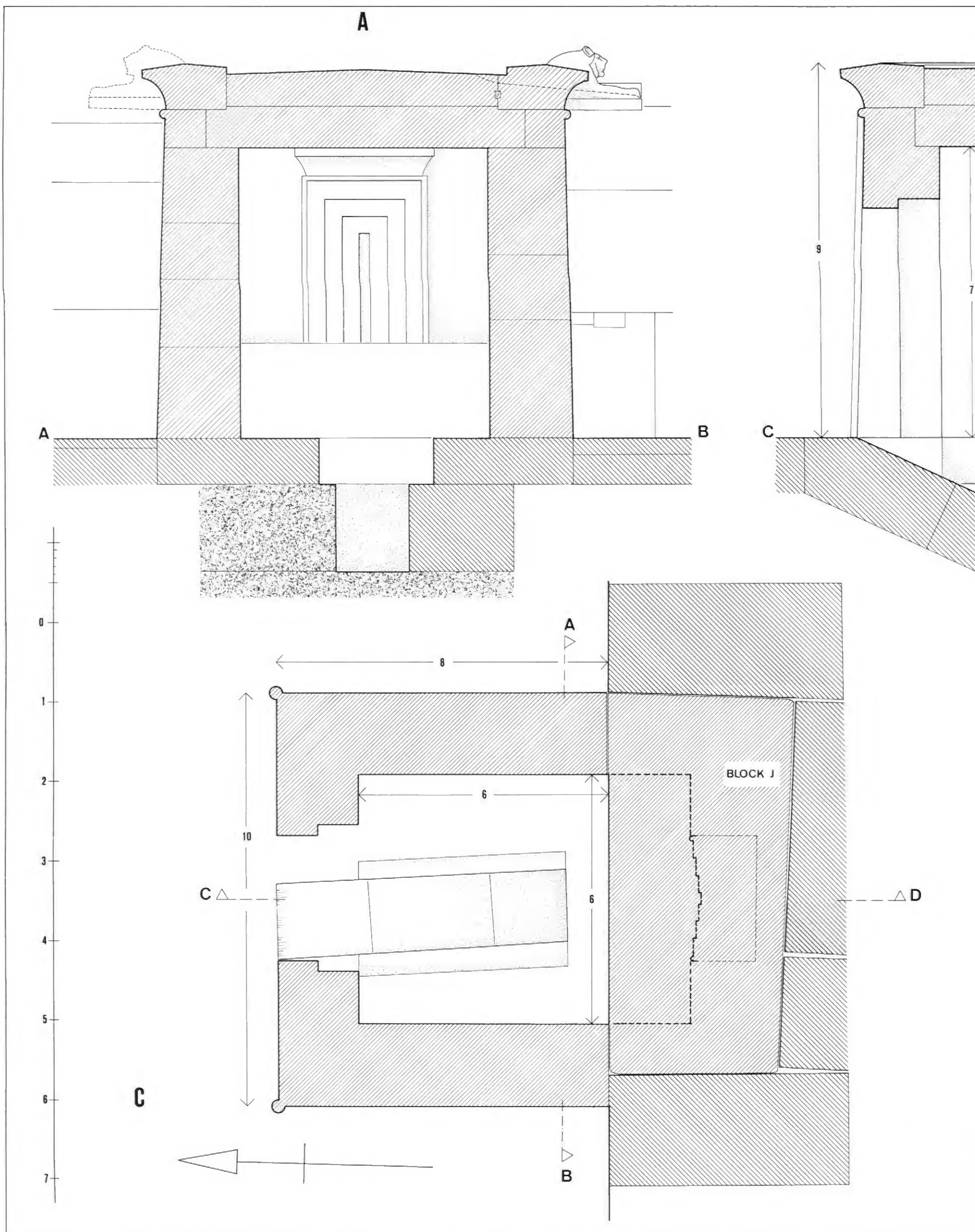
Pl. 97: Plan and sections of the north and south chambers of the Ka-pyramid.  
Scale 1:75. See pl. 48a-b and foldout IV.



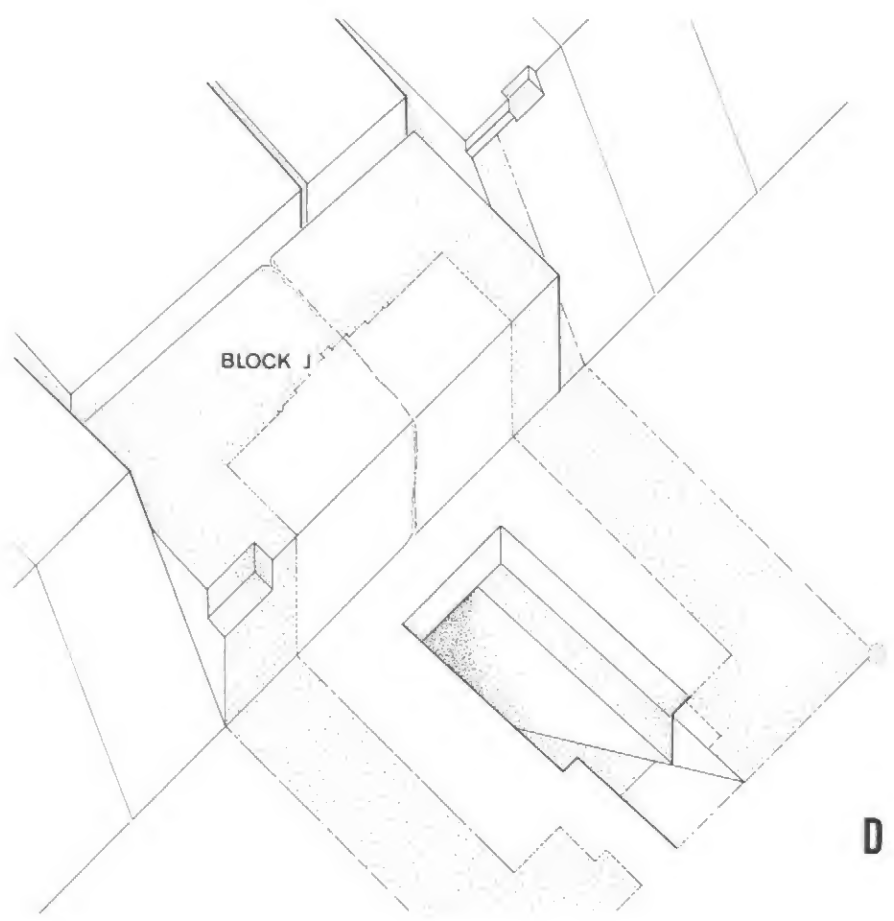
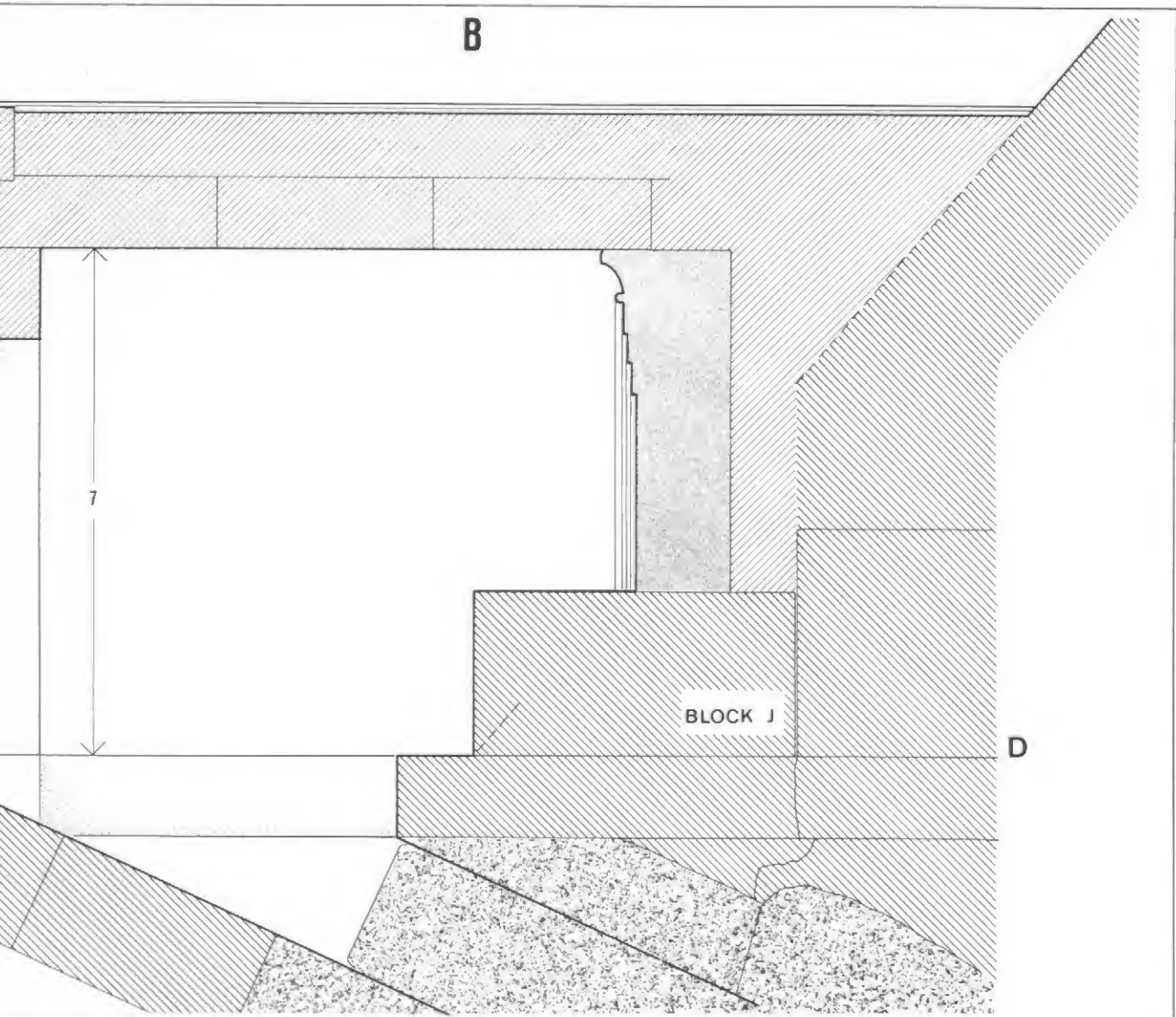
Pl. 98a: Plan and sections through the basin of unknown purpose in the southwest corner of the court of the Ka-pyramid. Scale 1:50. See pl. 47c-d.

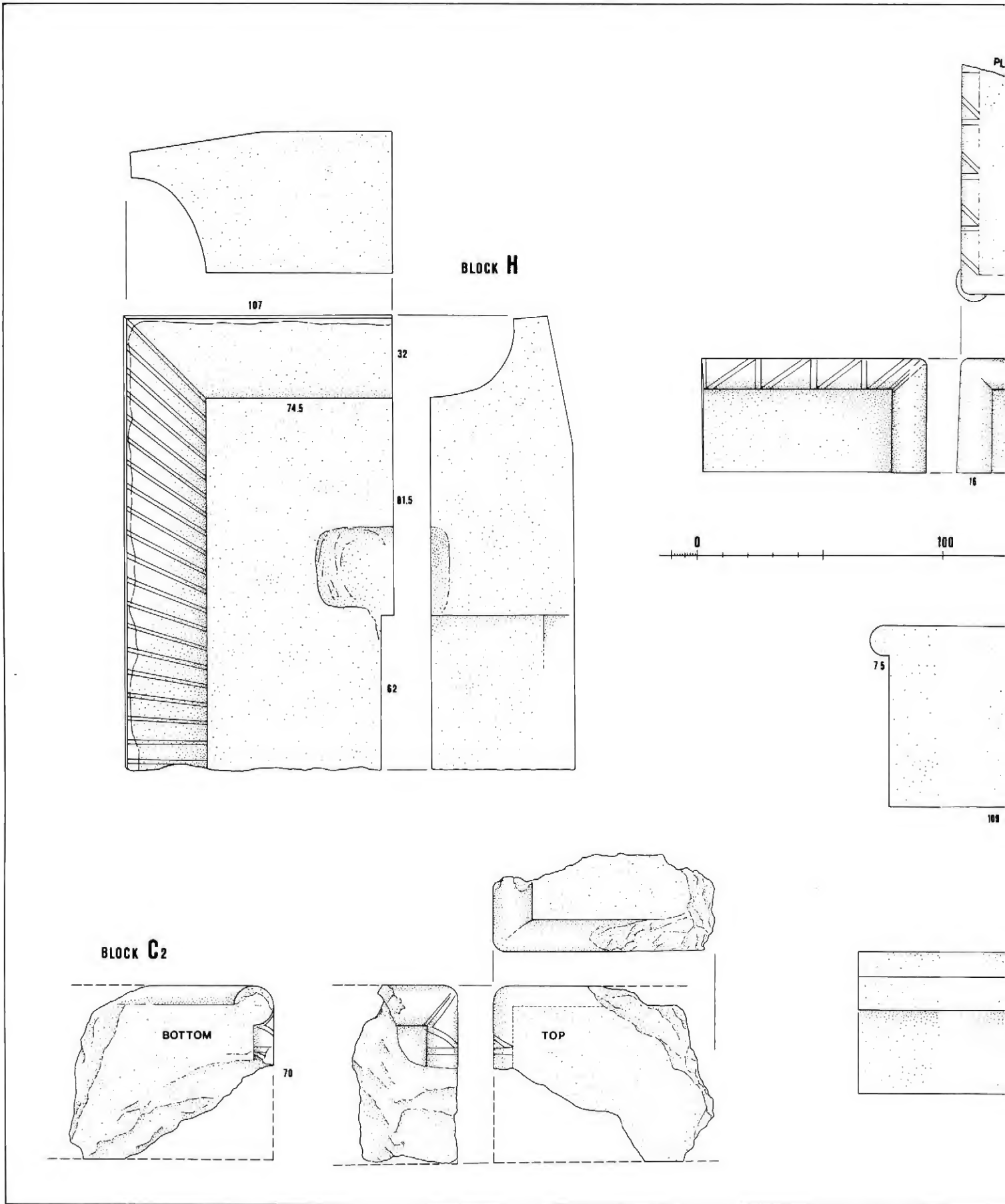


Pl. 98b: Small pavement deposit in the western part of the court of the Ka-pyramid. Scale 1:25. See p. 74 and pl. 47b.



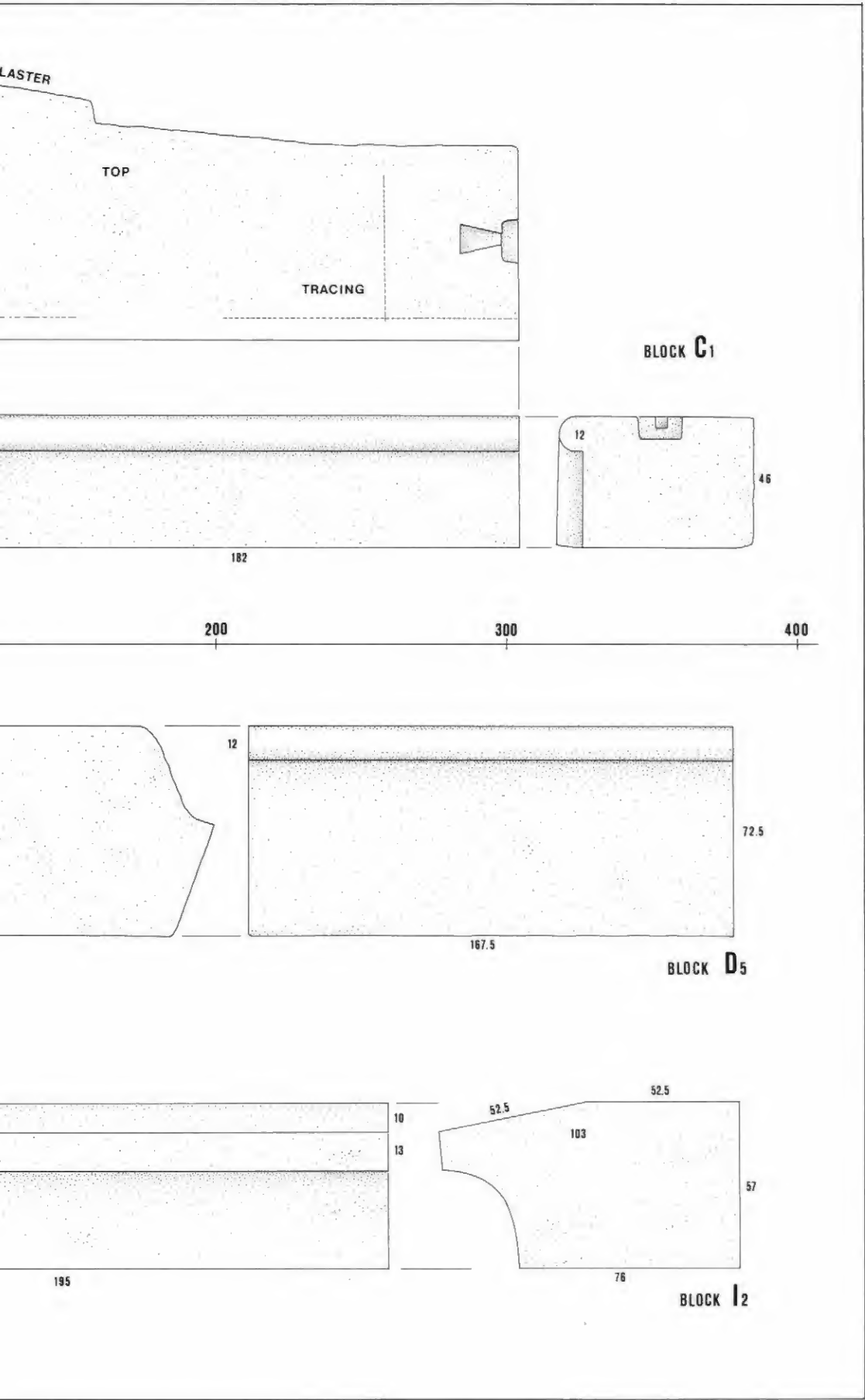
Pl. 99: Entrance chapel. A: East-west section, seen from north to south. Scale 1:50. B: North-south section, seen from east to west. Scale 1:50. C: Plan. Scale 1:50. D: Isometric reconstruction of back wall of entrance chapel. Without scale. See pls. 53-56.

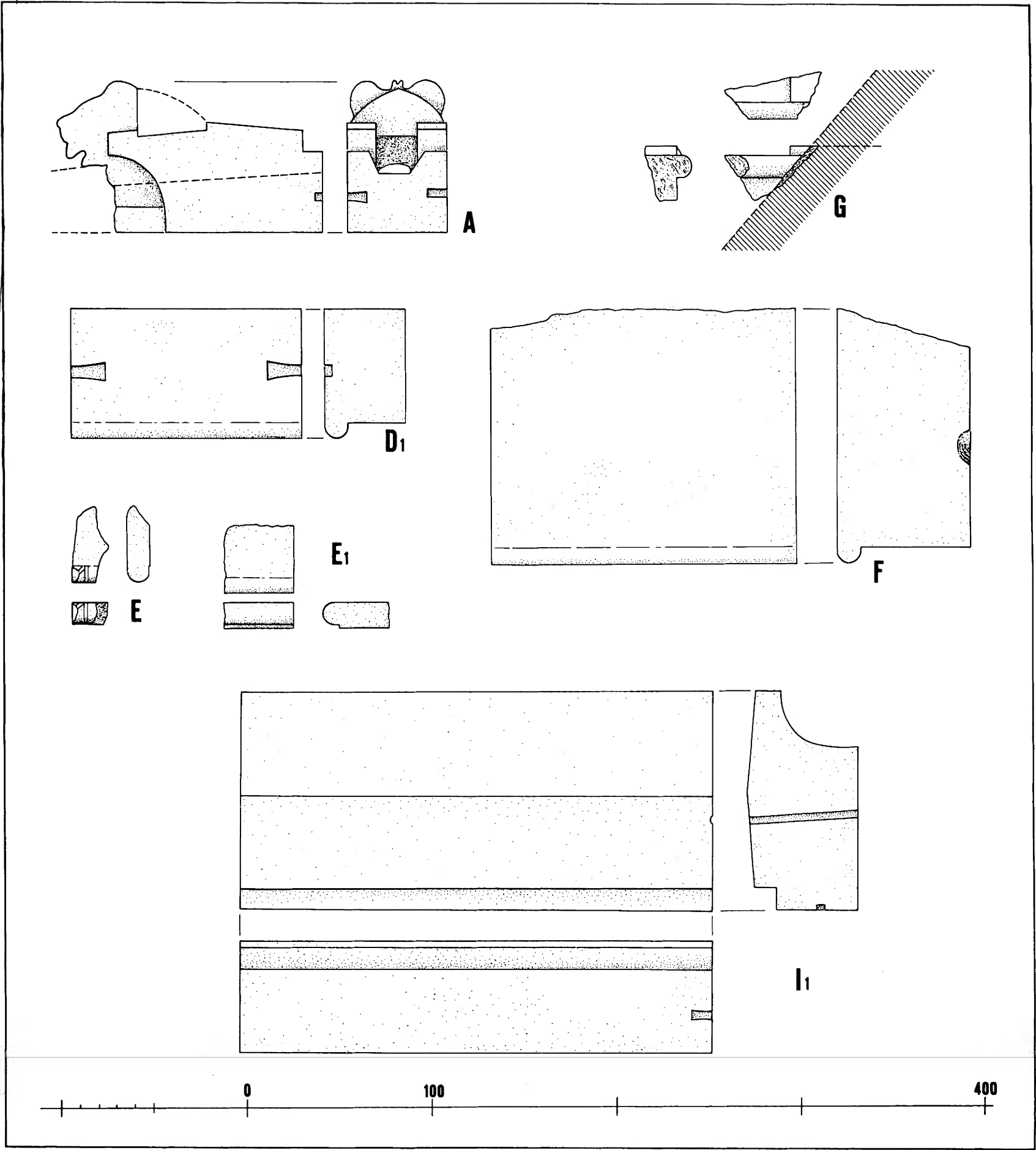




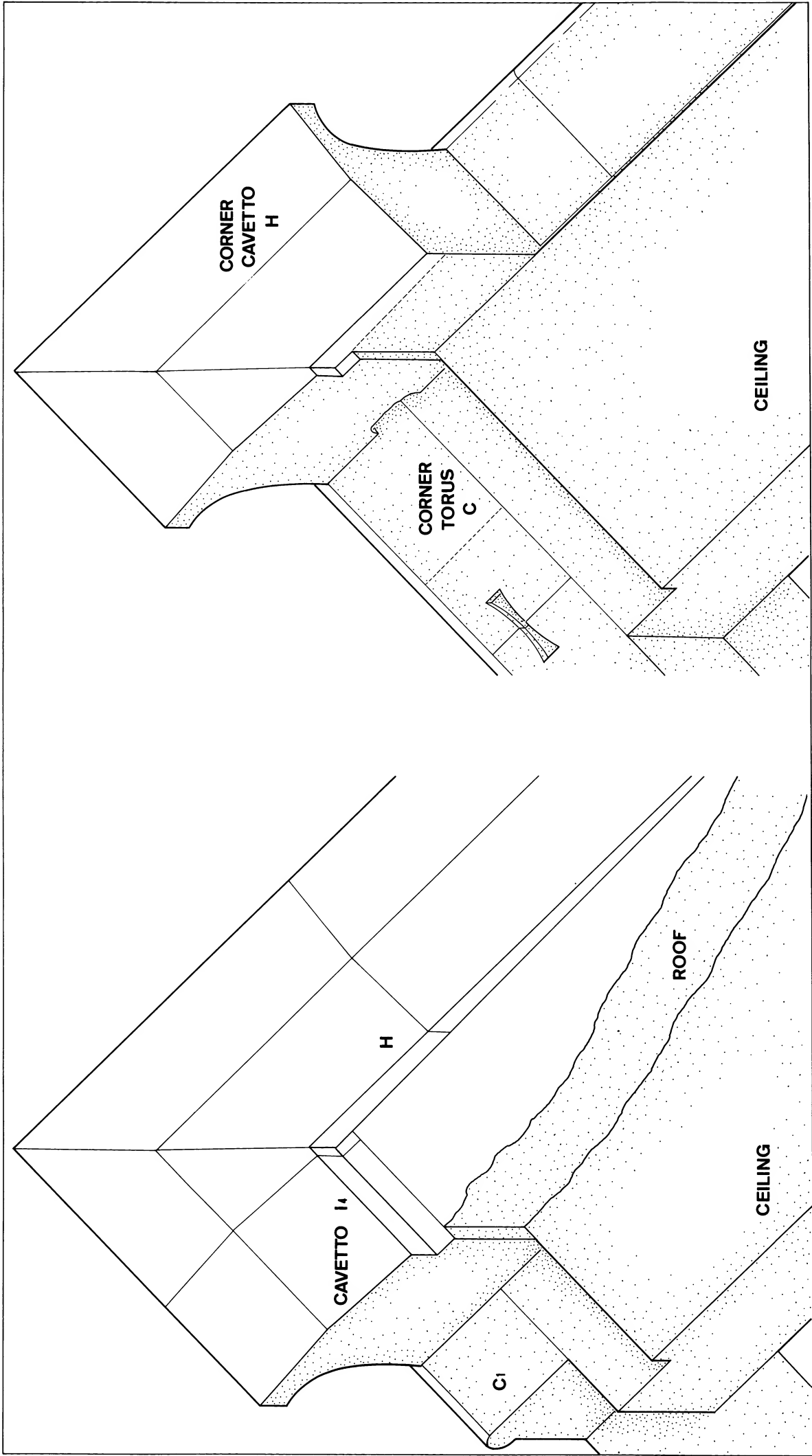
Pl. 100: Architectural fragments of the entrance chapel, re-excavated and drawn 1984/85. Scale 1:20. See pl. 52d.



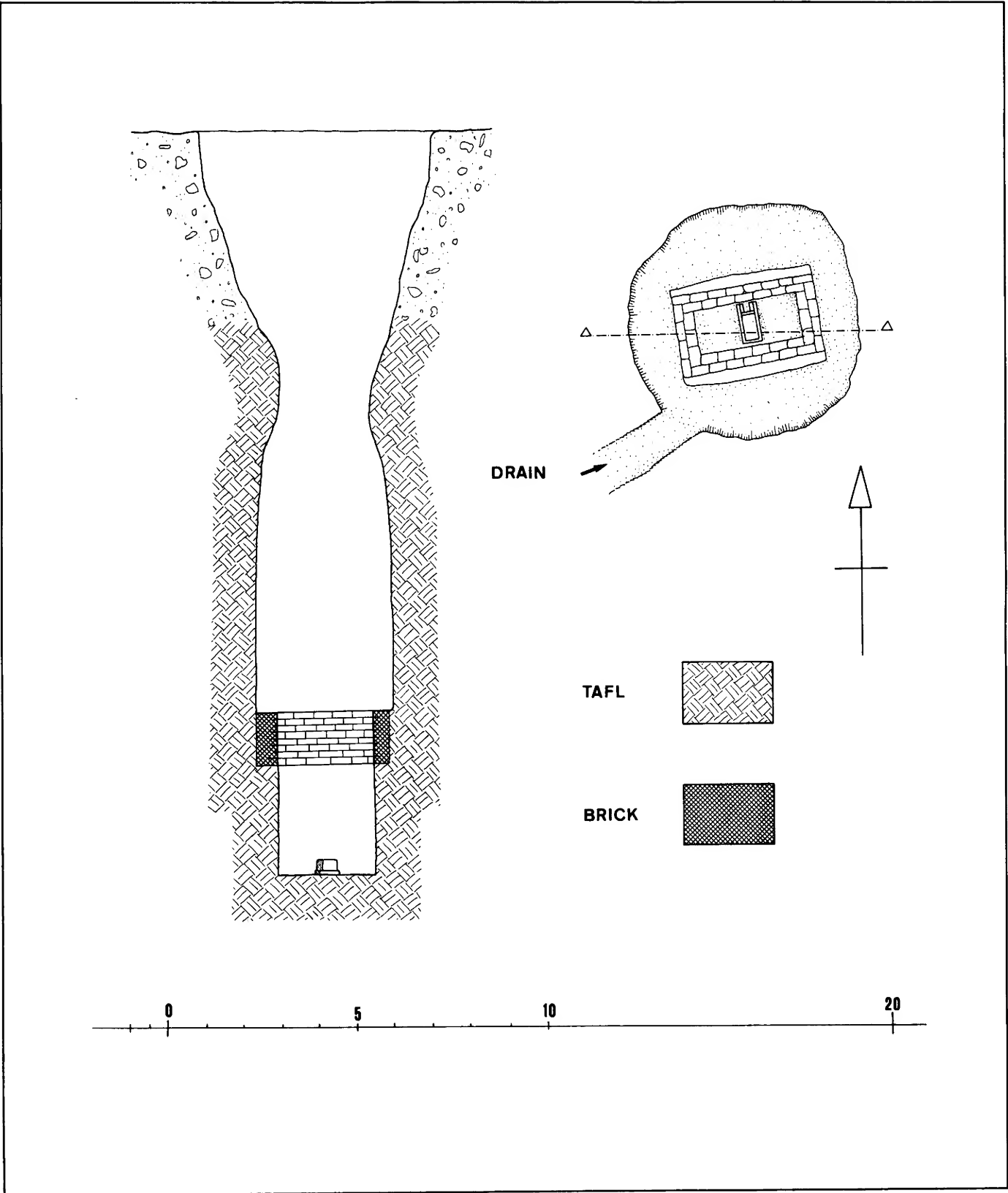




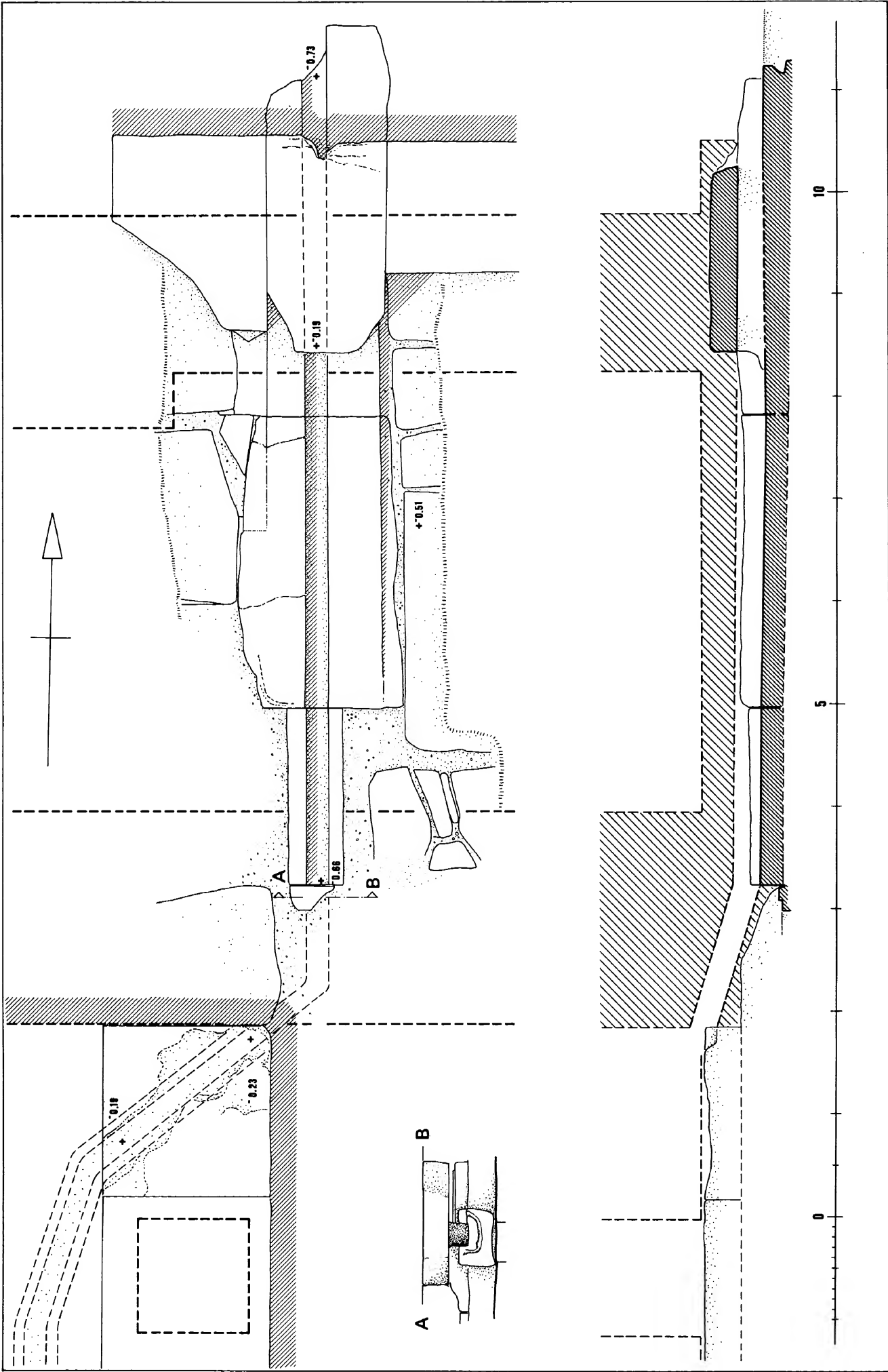
Pl. 101: Architectural fragments of the entrance chapel, drawn from records. Scale 1:25. See pl. 52b.



Pl. 102: Isometric reconstruction of the construction of the roof and cavetto of the northwest corner of the entrance chapel.

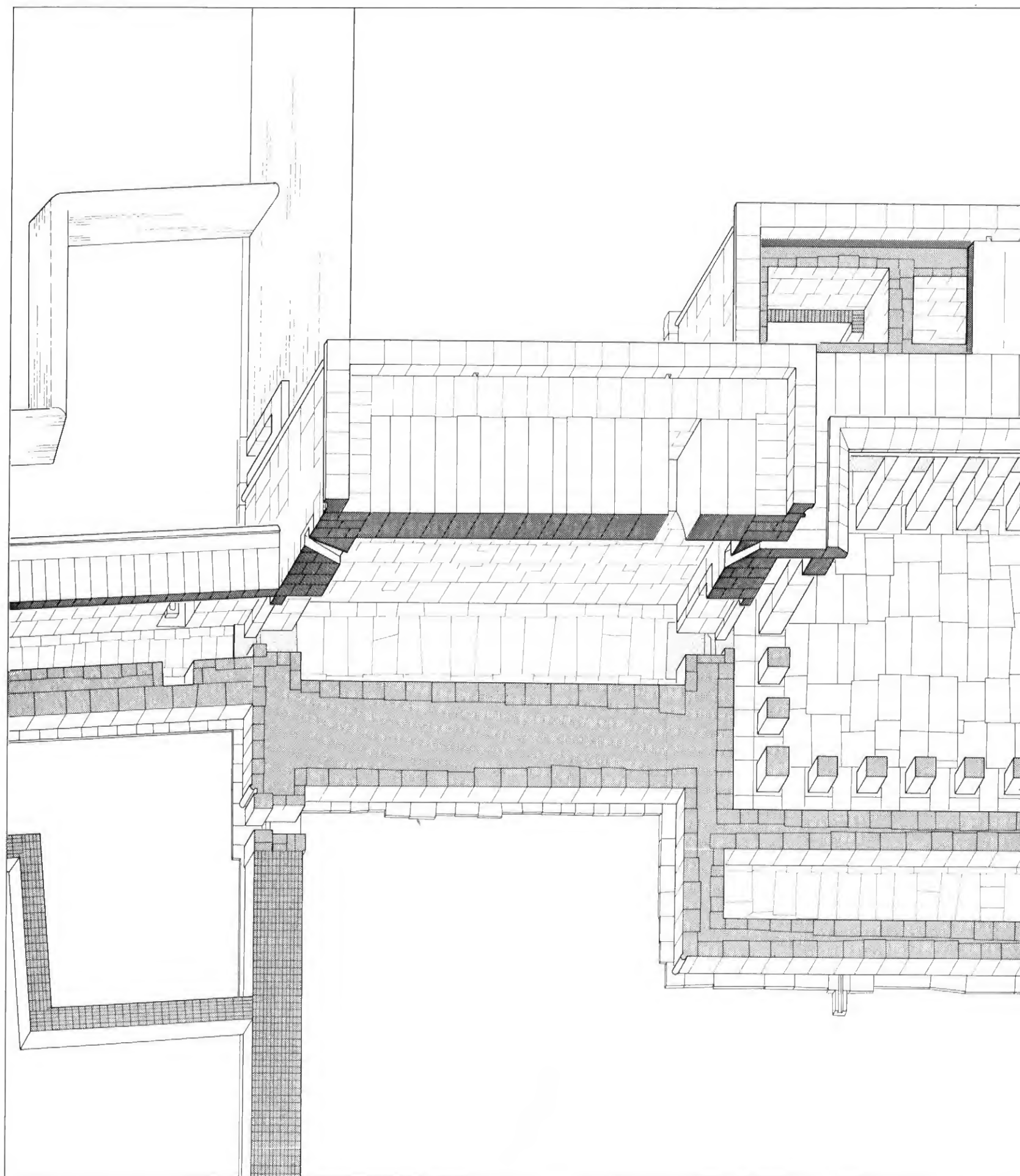


Pl. 103: Plan and west-east section through drain pit G, seen from south to north. Scale 1:150. See pl. 59.

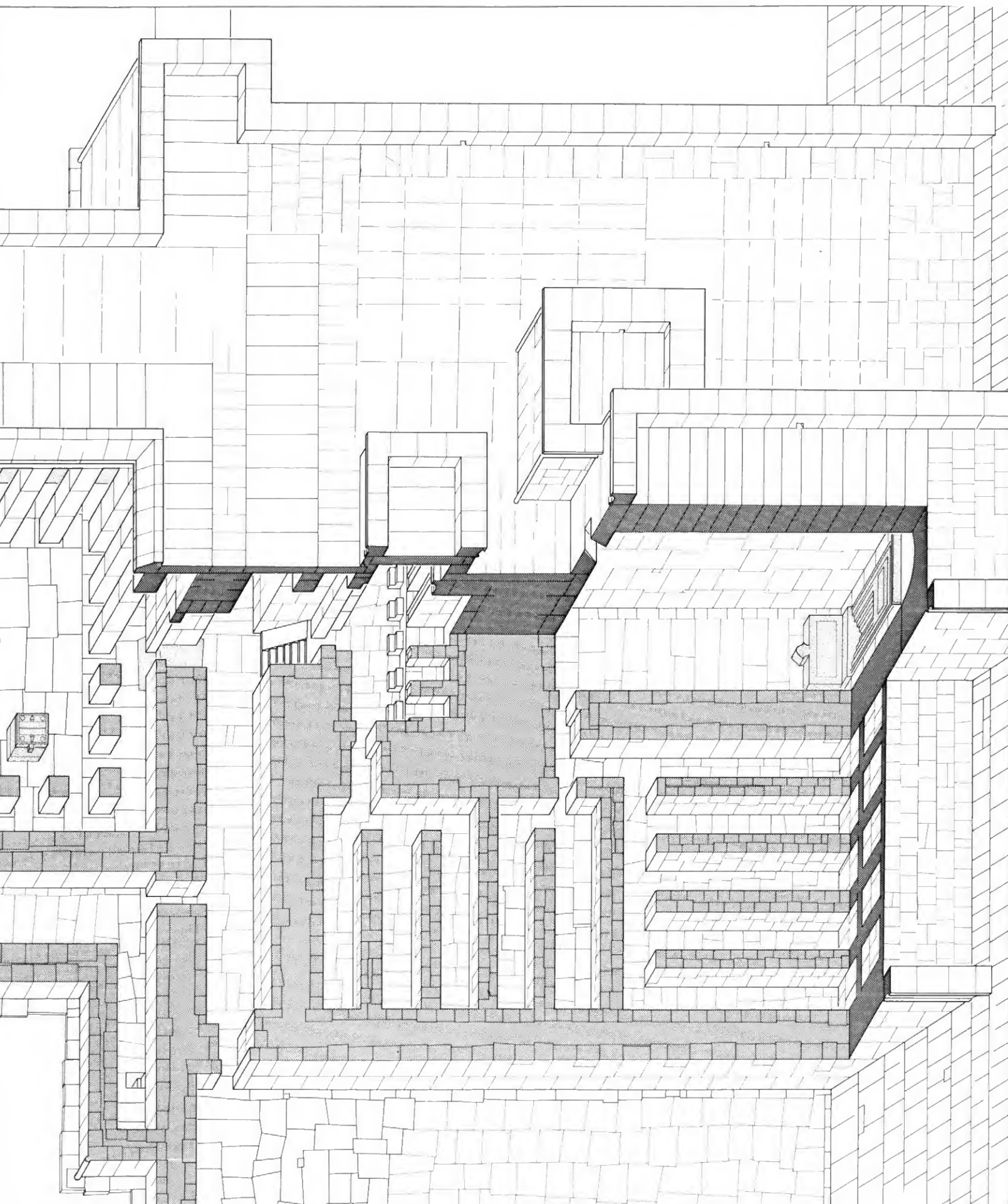


Pl. 104: Drain J, plan and south-north section, seen from east to west. Scale 1:50. See pl. 26b, 58b.





Pl. 105: Isometric reconstruction of the mortuary temple of Senwosret I. Scale 1:200.





## FOLDOUTS I–V

I. Central part of the mortuary complex of Senwosret I, excluding outer court constructions.  
Scale 1:400.

II. The mortuary temple of Senwosret I. Scale 1:200.

IIIa. East-west section through pillared court of mortuary temple, seen from south to north.  
Scale 1:50. See pl. 81.

IIIb. Sections through Ka-pyramid area. A: North-south section, seen from west to east.  
Scale 1:50.

B: West-east section, seen from south to north. Scale 1:50.

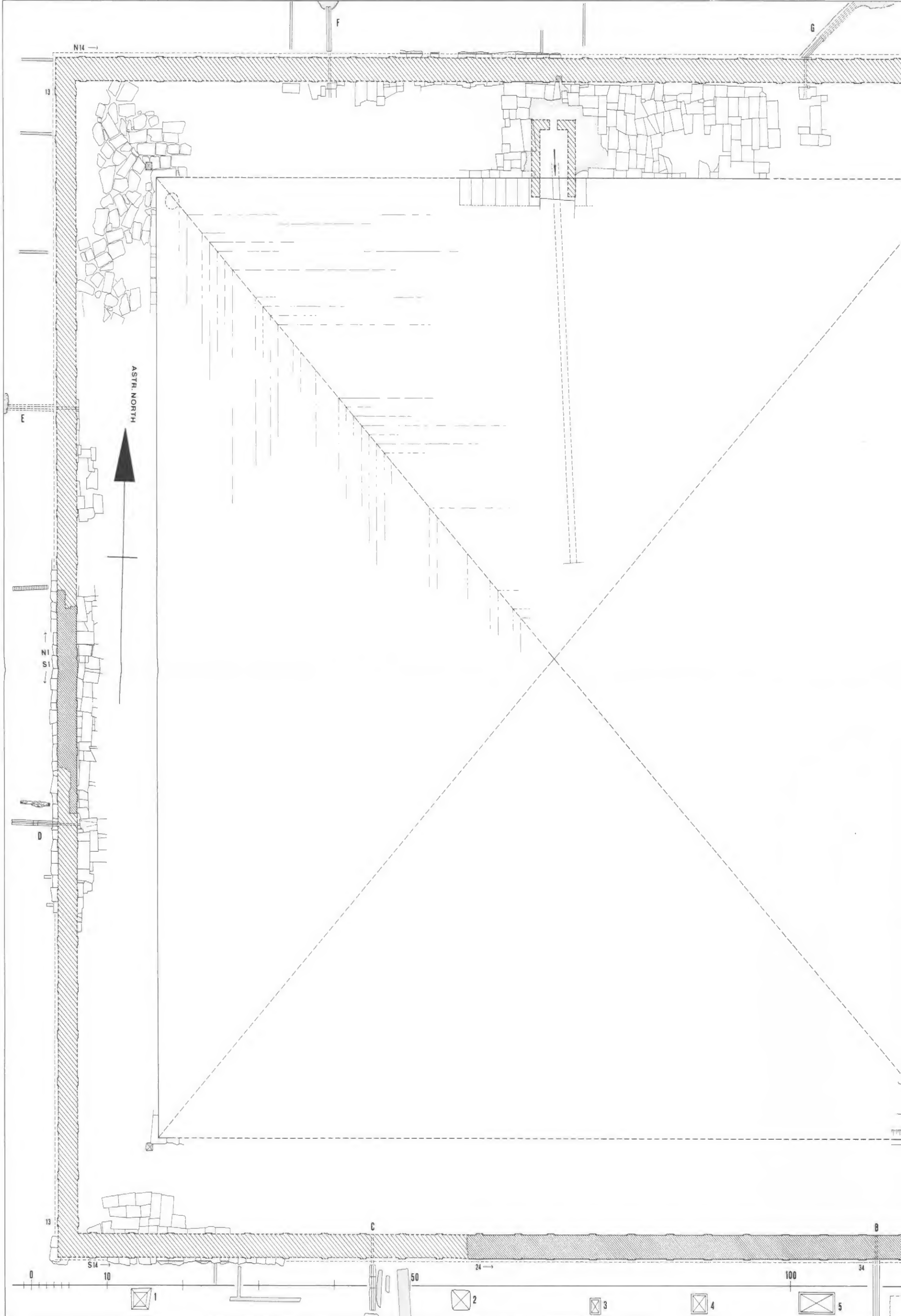
C: Section through drain channel in west wall. Scale 1:50.

IV. Plan of the area of the Ka-pyramid. Scale 1:100.

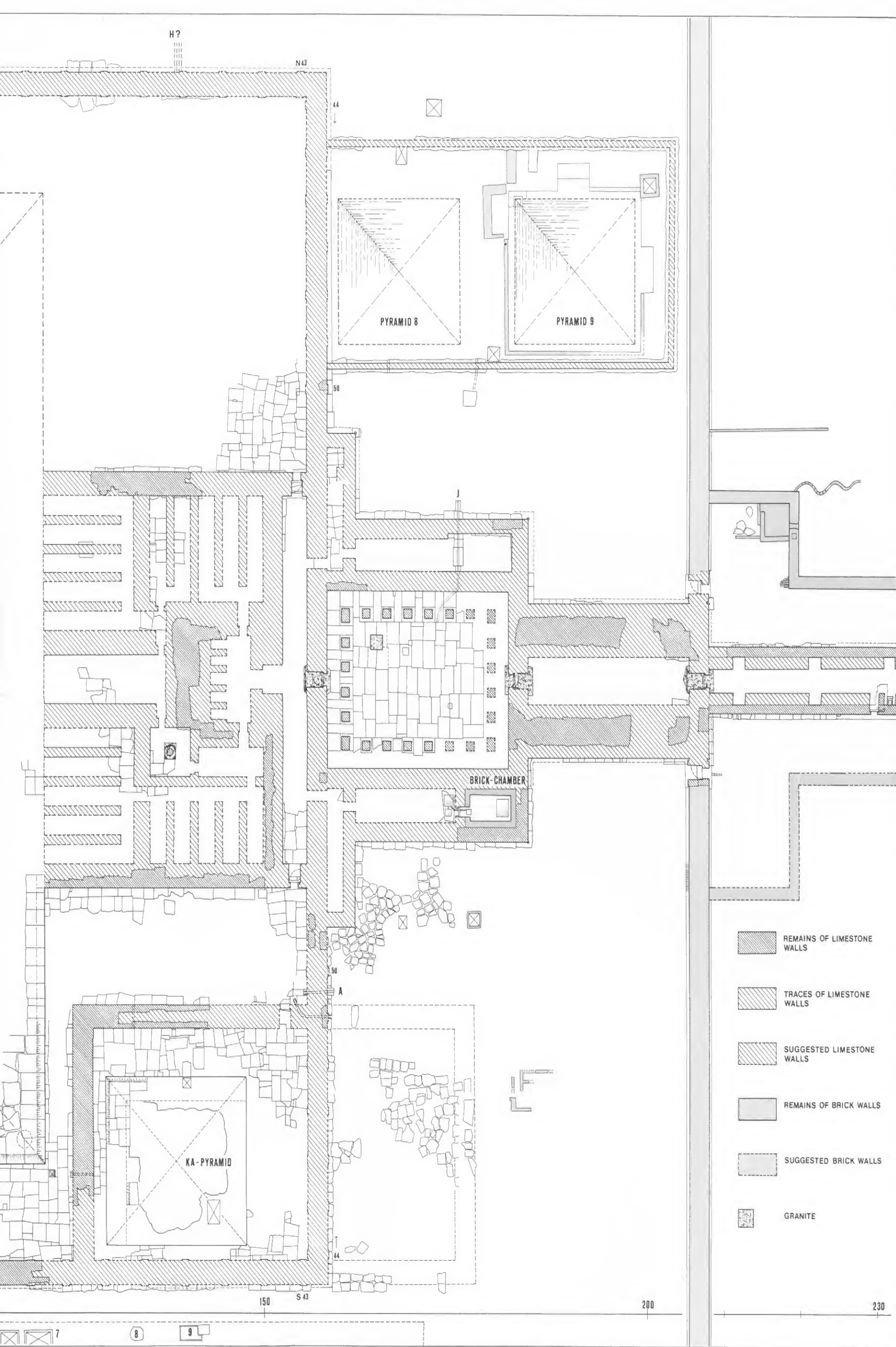
V. Underground apartments of the Ka-pyramid. Plan and south-north section, seen from  
east to west. Scale 1:100. See pl. 48.



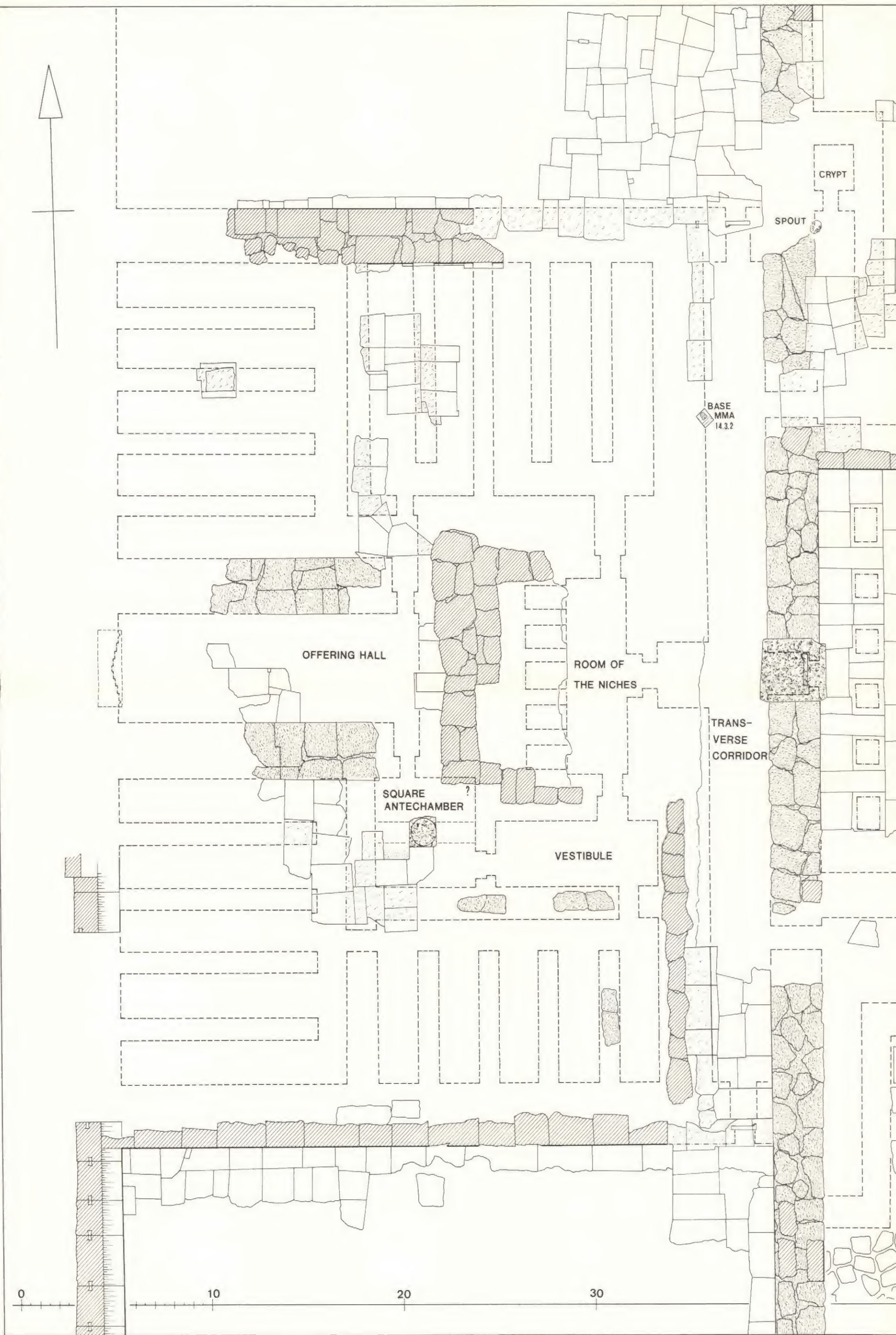




1. Central part of the mortuary complex of Senwosret I, excluding outer court constructions. Scale 1:400.





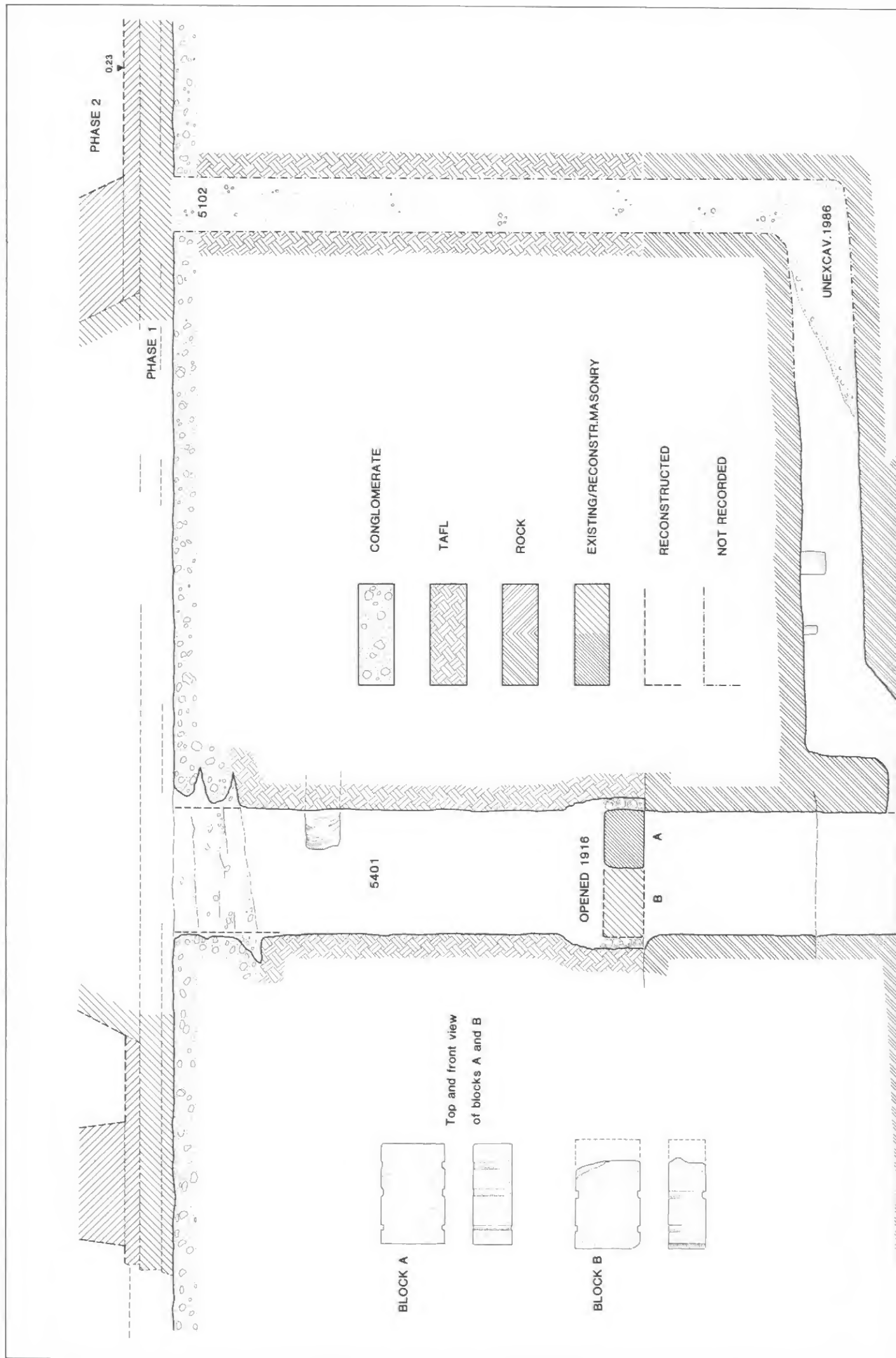


II. The mortuary temple of Senwosret I. Scale 1:200.

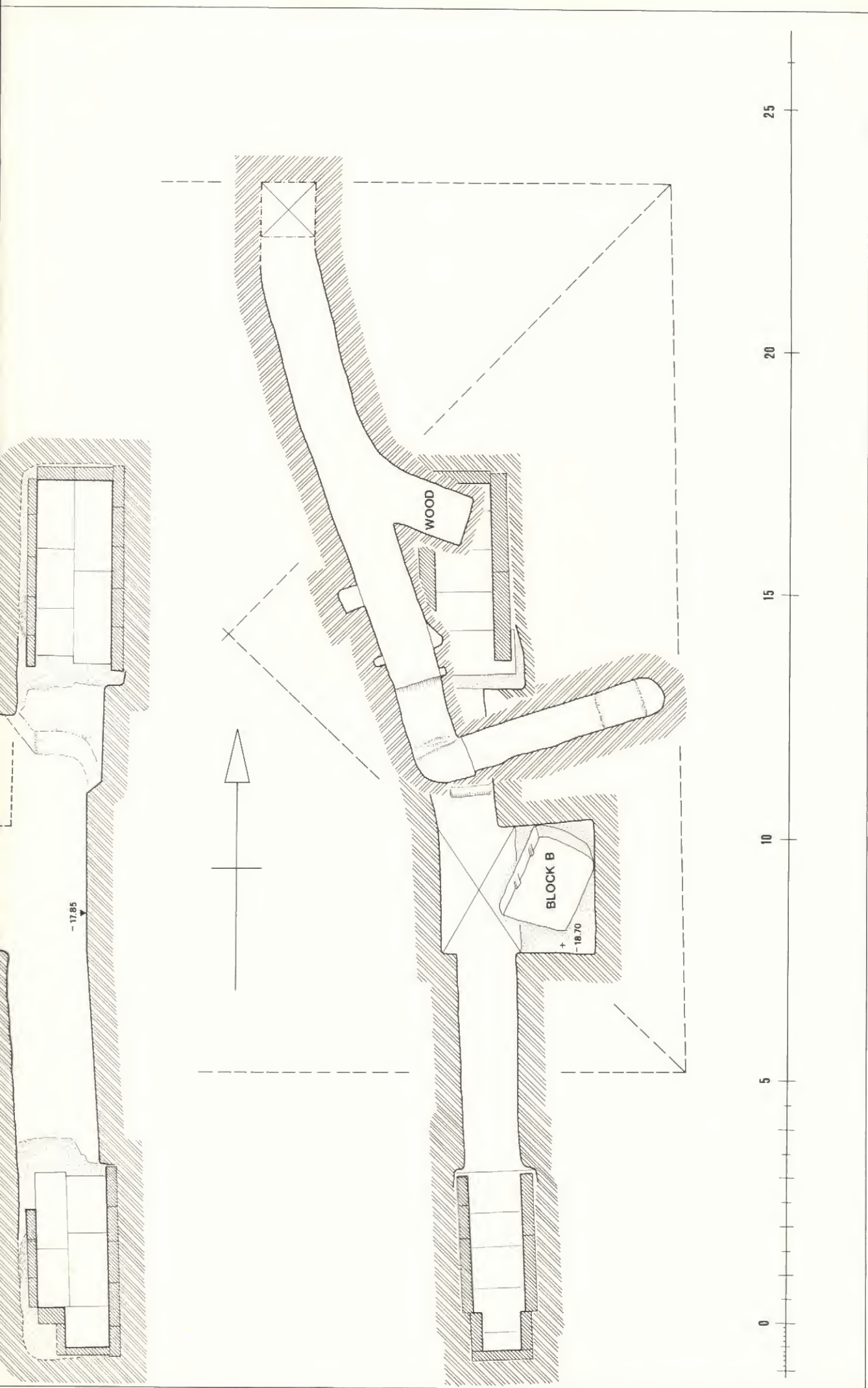
# EXPEDITION PLAN 1924/25



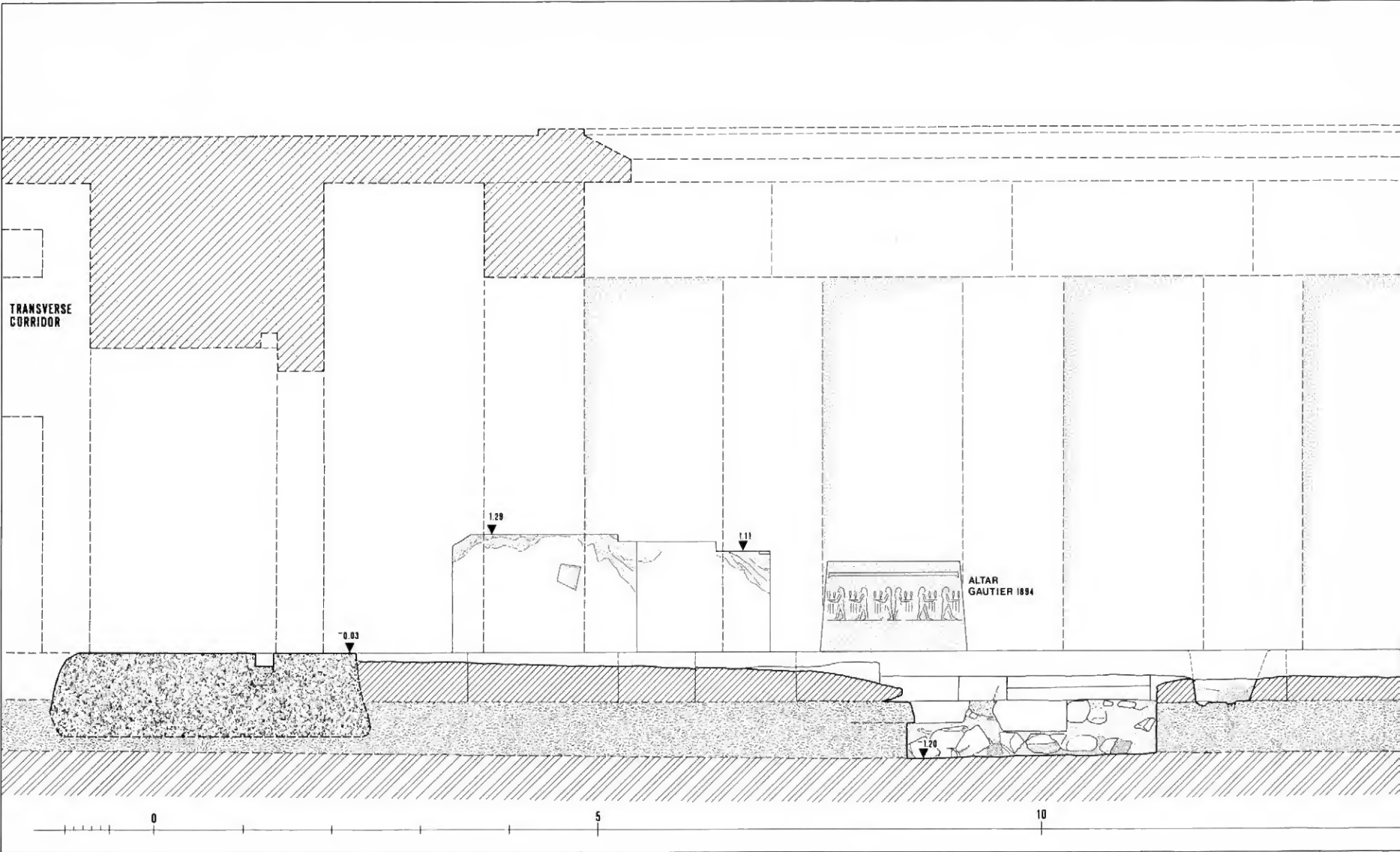




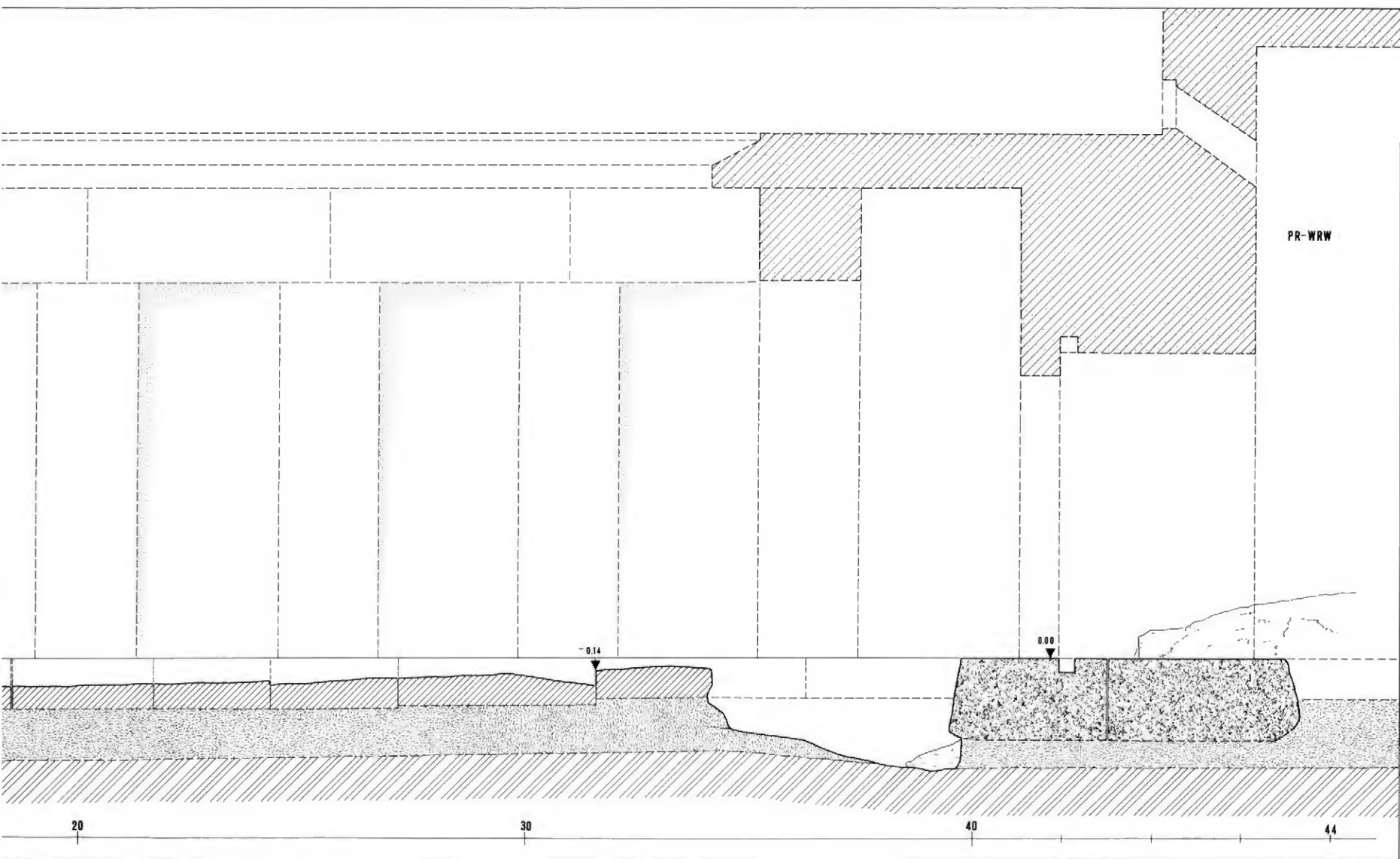


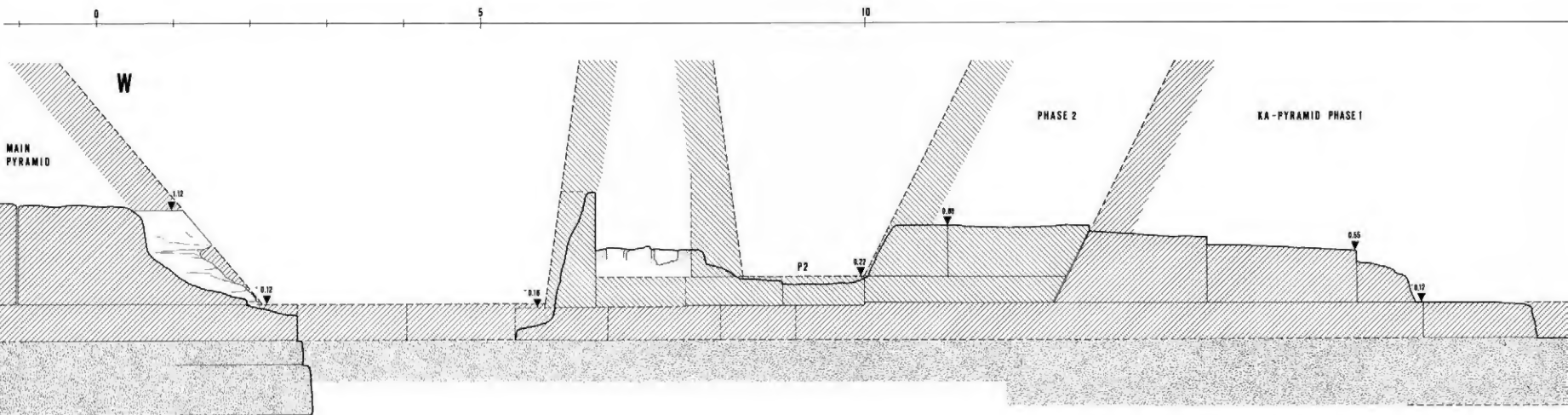
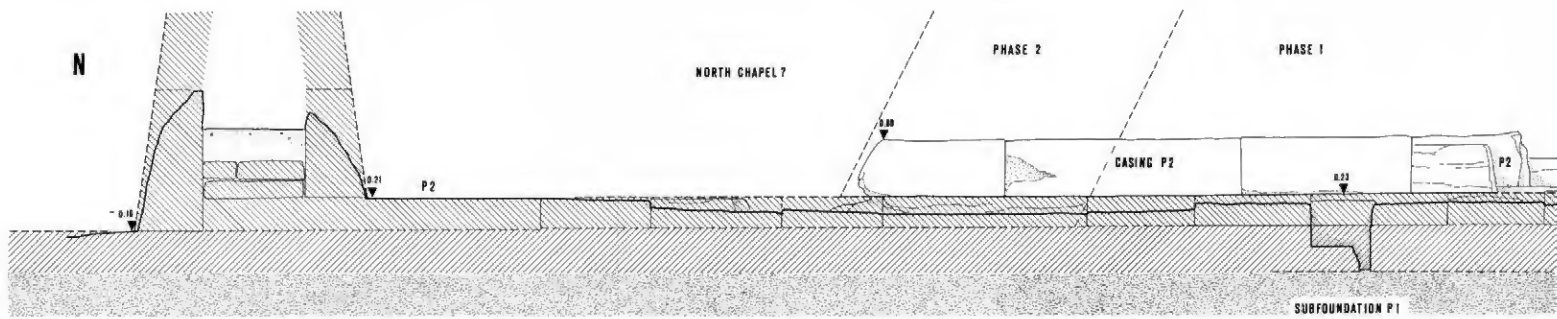


V. Underground apartments of the Ka-pyramid. Plan and south-north section, seen from east to west. Scale 1:100. See pl. 48.

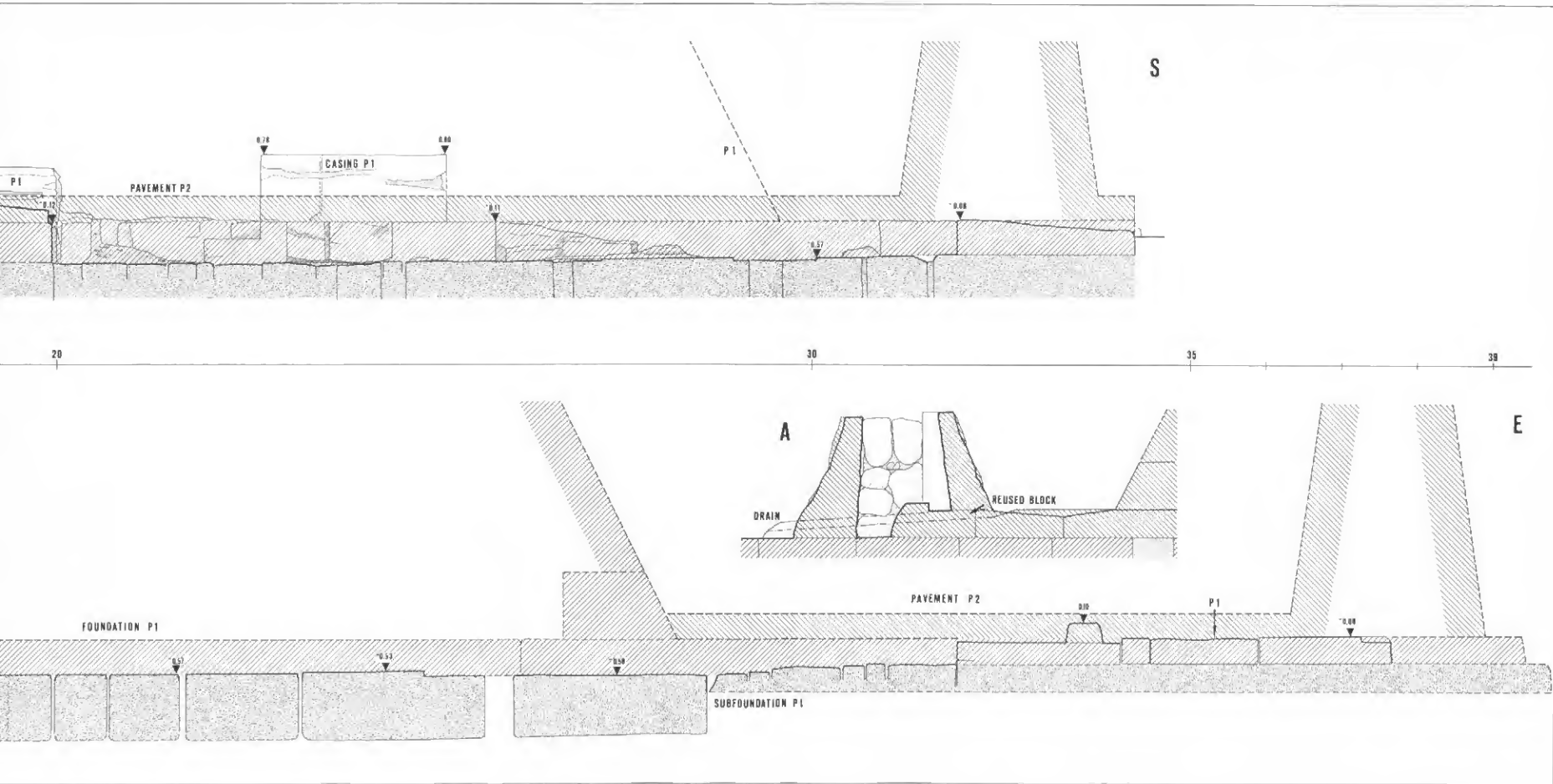


IIIa. East-west section through pillared court of mortuary temple, seen from south to north. Scale 1:50. See pl. 81.

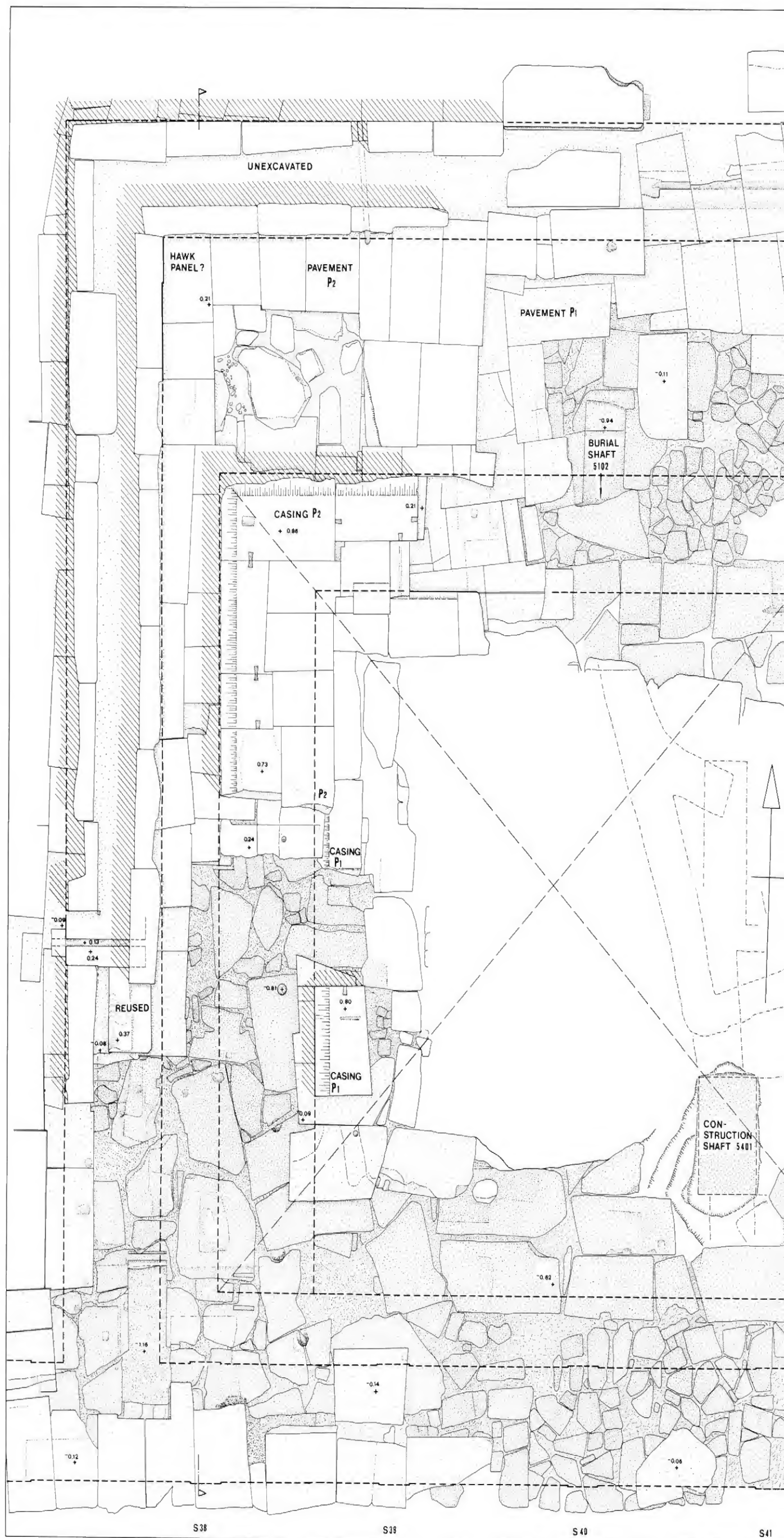




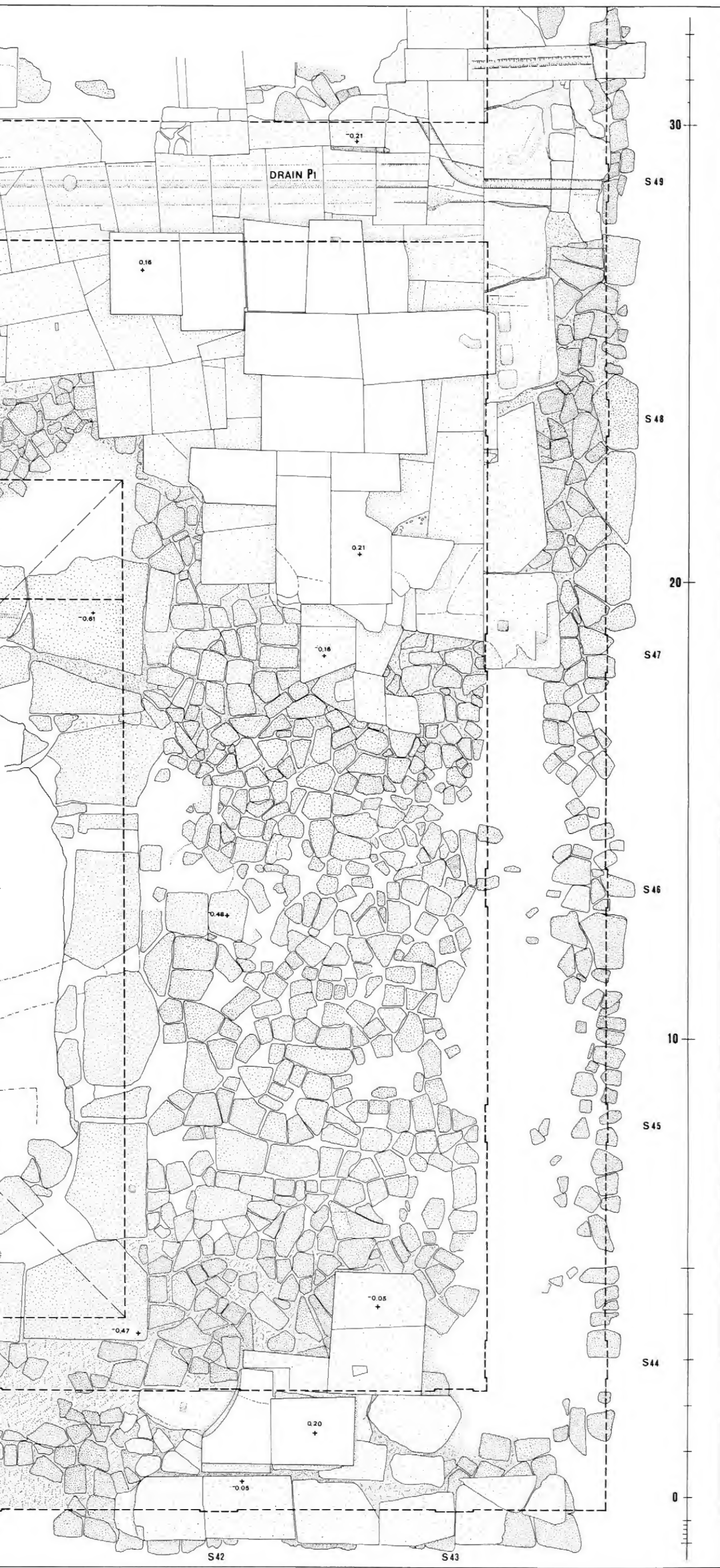
IIIb. Sections through Ka-pyramid area. A: North-south section, seen from west to east. Scale 1:50. B: West-east section, seen from south to north. Scale 1:50. C: Section through drain channel in west wall. Scale 1:50.







IV. Plan of the area of the Ka-pyramid. Scale 1:100.



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